COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR00689670

Journal
of the
New York
Institute of
Stomatology.

v.1

Serial
5
v.1
1906
Cop. 1

Columbia University
in the City of New York
School of Dental and Oral Surgery

Reference Library

lachrt.-gr.

contracts its bowels

Ever yours
Chas. F. Albau

THE JOURNAL

OF

THE NEW YORK INSTITUTE OF STOMATOLOGY
AMERICAN ACADEMY OF DENTAL SCIENCE
HARVARD ODONTOLOGICAL SOCIETY

AND THE

METROPOLITAN DISTRICT
(MASSACHUSETTS STATE SOCIETY)

Vol. I APRIL, 1906 No. 1

INTRODUCTION

Every publication should have a reason for its existence and should be able clearly to state this reason to its readers. It is fitting, then, that a few words should be spoken to explain the reasons which have urged the societies whose names are upon the title page to unite in the publication which now appears. The most important reason for the establishment of the present journal is the conviction that the time is ripe to place independent, professional journalism upon a more secure basis than it has ever rested before. The purpose is to take it out of competition with trade journals and put the burden of its support upon such societies as believe in a professional journal and are willing to support one by contributions of money and the reports of its proceedings. Only in this way, it is believed, can a professional, independent journal be maintained. It is fair to say that this method of maintaining a journal is not an altogether new one. For many years this plan has been in operation in Great Britain. The British Dental Association, which is composed of local societies scattered throughout Great Britain, maintains the "Journal of the British Dental Association." The cost of its maintenance is distributed amongst the

local societies and each member receives a copy of the journal free. In our own country the American Medical Association maintains the "Journal of the American Medical Association." It will be evident, then, that the new quarterly is founded upon a plan which has proved to be a successful one.

It seems hardly necessary to answer the question sometimes put—Why maintain an independent journal, why be dissatisfied with trade journals? That many are satisfied with trade journals is evident and to explain this satisfaction we must admit that our profession is in a transitional stage. In its beginning it was very closely allied to the mechanical trades. The scientific element in it was not large enough to engender the sentiments and aspirations of a learned profession. Trade ideas, commercial ideas, were absorbed in large measures, and have been very slowly eliminated. It is not strange, then, that many find nothing amiss in allowing commercial interests to take charge of professional literature. They find such paternalism pleasant and satisfactory. Imperfect conceptions go with the evolution of every profession and are gradually changed as the real ideals of the profession come clearly into view. It must be so with the dental profession, and the time cannot be far distant when it will generally be recognized as unwise and unscientific to entrust the publication of its records to those whose interests are first of all commercial, and whose journals cannot help being influenced by considerations of personal gain. These statements seem self-evident and not to need proof. As to the outlook for the new quarterly; the four societies whose names appear upon the cover are able to maintain it alone, without the assistance of other societies, but it is expected that other societies will look upon the matter of independent journalism in the same way as it is viewed by the four societies above mentioned and will desire to unite in carrying on the work. Such an extension of interest and influence can naturally be expected, and will be welcome.

William H. Potter.

"EXTRACTION OF PERMANENT TEETH." *

Its Bearing on the Hygiene of the Mouth and a Proper Procedure in the Treatment of Some Cases of Malocclusion..

BY EUGENE H. SMITH, D. M. D., BOSTON, MASS.

Mr. President and Gentlemen :—The study and experience of many of our profession have led them to proclaim as follows:

That the extracting of permanent teeth in the treatment of any case of malocclusion is little short of a crime, and that the statement of our earlier etiologist that a child might inherit the teeth of one parent and the jaw of the other parent, is not only erroneous but harmful. That in all cases of malocclusion the teeth should be brought to normal occlusion. That in cases where one or more permanent teeth have been lost, their places should be supplied by means of partial plates or bridges, and, second, permanent molars that may have moved anteriorly to good occlusion in consequence of the early loss of the first molars, should be forced back to make room for these artificial substitutes.

To-night I am to take issue with these gentlemen and with the aid of my slides try to prove to you that in some cases of malocclusion the extracting of good and sound teeth is a proper method of procedure. I will also present evidence tending to show that some people do inherit large jaws with small teeth and jaws with too many teeth.

I am aware that it would not be evidence to some men to show what I might term a small jaw with large teeth for the reason that they would claim that however irregular the teeth might be they should be brought to normal occlusion regardless of what would seem to some of us as a mouth hideous in "All Teeth."

I have not the time to-night, and perhaps it may not be within the province of this paper, to enter upon the subject of heredity. My reading, however, along this line has led me to believe that a typical specimen of any typical race is so rare as to be out of consideration in the diagnosis of any case of malocclusion. In short, the larger part of the cases we have to treat, especially in

* Read before The New York Institute of Stomatology, January 2, 1906

an infirmary clinic shows heredity and degeneracy to a marked degree.

In the treatment of any given case of malocclusion, two important results must be considered, physiognomy and normal occlusion. In many cases, to my thinking, you cannot obtain both and I believe that normal occlusion should always be sacrificed for proper facial relations and efficient occlusion.

In support of my views I will first show upon the screen a picture of a side view of a typical skull and normal occlusion.

The next picture is the under view of the same skull with the mandible removed.

The next picture shows a frontal view of the same skull.

The next picture shows the side view of a prognathous skull of a negro with eighteen teeth in the upper jaw.

The next picture shows two mandibles, the upper being a picture from an adult of the Fan tribe of West Africa; the lower, a picture from an adult Caucasian.

You will note the difference between the rami, the alveolar slope and the gnathion of these two mandibles.

The next picture shows a molar tooth in the place of the upper incisor. (Fig. 1.)

Fig. 1.

The next four pictures show double rows of teeth and monstrosities. (Fig. 2.)

Fig. 2.

No. 187—3 Slides.

Fig. 3.

Male—Age 16. (Fig. 3.)

1905. Model A—3 slides, showing small teeth in large jaw. With the exception of the wisdom teeth yet to erupt, all of the teeth are present and in normal occlusion.

No. 176—3 Slides.

Male—Age 14.

1904. Model A—3 slides, showing small teeth in large jaw. With the exception of the wisdom teeth yet to erupt, all of the teeth are present and in normal occlusion.

No. 168—3 Slides.

Female—Age 20.

Model A.—3 slides, showing normal occlusion with small superior incisors.

Fig. 4.

Fig. 5.

No. 172—3 Slides. (Fig. 4; Fig. 5.)

Female—Age 40.

Model A—3 slides, showing condition where laterals have never erupted on account of missing germs. The patient's mother and grandmother had the same deformity, and one of her own children, a girl of 12, is without superior laterals.

The 22 slides which I have shown you range from two diverse typical types to various heredity results of pronounced malformations. Of the cases of malocclusion that we meet in practice many are caused by the hereditary tendencies resulting from long years of inter-race marriages, not the least of which is the inheritance of jaws too small for the teeth and teeth too small for the jaws.

The next pictures that I will throw upon the screen will show you the good results that have followed my practice of extracting badly decayed, broken down, and diseased sixth-year molars at an age that allowed of the 12th-year molars moving forward to the place of the 6th-year molars maintaining practically their normal occlusal relations with facial harmony unimpaired.

The first of these cases is

No. 34—6 Slides.

Patient, Female—Age 13.

1886. Model A—3 slides, showing condition of the mouth at the time the patient came into my hands. You will note that the lower, left, molar had been extracted. I extracted the remaining 6th-year molars.

1890. Model B—3 slides, showing condition. No appliances. At the present time the teeth remain much the same. The wisdom teeth are in place.

No. 162—3 Slides.

Male—Age 25.

1905. Model A—3 slides, showing condition after extracting four 6th-year molars somewhat decayed. Extracting was done when patient was 14. Teeth at that time were slightly irregular. No appliance was used.

Fig. 6.

No. 28—9 Slides.

Male—Age 25.

1881. Model A—3 slides, showing condition Previous to patient coming into my hands he had lost the upper, right, sixth-year molar. In September, 1881, I extracted the upper, left, sixth-year molar. Two years later, in 1883, I extracted the lower sixth-year molar.

Fig. 7.

Model B—3 slides, shows the change that had taken place in four years.

Nov. 28, 1900. Model C—3 slides, shows the condition at the present time. No appliance used.

No. 181—3 Slides. (Fig. 6; Fig. 7.)

Female—Age 35.

1905. Model A—3 slides, showing a very excellent occlusion. The lower, right, second bicuspid was in lingual occlusion and was extracted when the patient was 18. No appliance used.

Fig. 8.

No. 105—9 Slides.

Female—Age 14.

Patient nervous and not strong. Had been told by a dentist that to extract would ruin the mouth, that the arches should be widened and the teeth brought to normal occlusion. Oct. 1, 1892, I extracted the superior, second bicuspids and the lower, right second bicuspid.

Fig 9.

Model A—3 slides, showing condition at this time.

Dec. 23, 1893. Model B—3 slides, showing change that has taken place since extracting. (Figs. 8, 9, 10.)

April 3, 1905. Model C—3 slides, showing present condition. The dental facial appearance is excellent. A wider arch or more prominent teeth would be very undesirable. No appliance used. (Figs. 11, 12.)

No. 163—3 Slides.

Male—Age 35.

Model A—3 slides, showing good and efficient occlusion with

Fig. 10.

Fig. 11.

the sixth-year molars missing. They were extracted when the patient was about 13. The sixth-year molars were slightly decayed and teeth somewhat irregular. No appliances were used.

No. 24—6 Slides.

Male—Age 13.

Oct., 1889. Model A—3 slides, showing condition. The lower, right molar pulpless and apical foramen not closed. The lower, left molar pulp exposed. The upper molars in fair condition. I extracted the four sixth-year molars.

Fig. 12.

Fig. 13.

Mch. 12, 1890, bicuspids were moving back. Inserted stay plate.

Sept. 5, 1892—3 slides, showing condition.

No. 40—6 Slides.

Male—Age 16.

Sept. 23, 1889. Model A—3 slides, showing condition. Lower, left, second bicuspid in lingual occlusion. Extracted. (Figs. 13, 14.)

1894. Model C—3 slides, showing condition. No appliances used. (Figs. 15, 16.)

Fig. 14.

Fig. 15.

No. 67—6 Slides.

Female—Age 14.

April, 1890. Model A—3 slides, showing condition. Sixth-year molars much diseased. The lower molars pulpless and ulcerating. Pulps exposed in the upper molars. I extracted the four sixth-year molars.

Fig. 16.

Fig. 17.

Oct., 1893. Model B—3 slides, showing condition. No appliance.

No. O—8 Slides.

Male—Age 16.

These slides show a case in my school clinic back in the nineties. The model was painted by the student and looked well at that time. It has deteriorated in looks since and the slides will show that deterioration. It was a case of the superior laterals in lingual occlusion and the lower, right, sixth-year molar missing. I extracted the upper, first bicuspids.

Fig. 18.

Fig. 19.

Model A—3 slides, showing condition before extracting.

Model B—3 slides, showing condition after operating.

Two slides, showing appliances used.

No. 90—6 Slides.

Male—Age 15.

Jan., 1892. Model A—3 slides, showing condition. Facial

Fig. 20.

Fig. 21.

appearance that of too many and too prominent teeth. I extracted the four first bicuspids. Appliances used. Regulating was completed in June, 1892; five months.

1895. Model G—3 slides, showing condition.

No. 145—6 Slides.

Female—Age 15. (Figs. 17, 18.)

Model A—3 slides, showing condition. The lower, sixth-year molars had been extracted previous to the patient coming into my hands. I extracted the upper, left, first bicuspids. Appliances used.

Fig. 22.

Fig. 23.

1905. Model C—3 slides, showing present condition. (Figs. 19, 20.)

No. 129—9 Slides.

Male—Age 24.

Mch. 25, 1895. Model A—3 slides, showing condition. Patient had superior, first bicuspids extracted in the West.

Oct., 1895. Model B—3 slides, showing finish.

Oct., 1896. Model D—3 slides, showing condition.

Fig. 24.

No. 157—3 Slides.

Male—Age 35. (Figs 21, 22.)

Model A—3 slides, showing results of extracting four sixth-year molars when he was about 12 years old. Teeth were irregular and appliances worn.

No. 186—3 Slides.

Male—Age 30. (Figs. 23, 24.)

1905. Model A—Showing present condition as the result of the extracting of the four sixth-year molars. Patient says that his teeth were irregular and that he wore appliances for their correction.

Mr. President and Gentlemen:—This is the last of my lot of silent witnesses that I have to show in proof of my contention that the judicious extracting of permanent teeth in the treatment of some cases of malocclusion and in its broader relations to the general health of the mouth is not so barbarous nor so wicked as some of our so-called "New School of Orthodontists" would have us believe.

Note.—On account of the cost of publishing the photographs of all the slides mentioned in the paper only those pictures are shown that best illustrate the points made.

CONTAGIOUS ERUPTIONS OF THE FACE, MOUTH AND SCALP TO WHICH THE DENTAL PROFESSION IS EXPOSED.*

BY CHARLES J. WHITE, M. D.,
Instructor of Dermatology in Harvard University.

Mr. President and Members of the Academy:—It gives me great pleasure to come before you to-night with this paper, for I have often thought, as I have sat in the chair of one of your members here to-night, to how great a risk men of your profession are often exposed in the discharge of your duties by the close contact necessary for the proper treatment of your patients. Your first year's studies are now performed in the medical school, but to me it seems only fair that part of your third year's duties should recall you to that same institution where you could become more

* Read before American Academy of Dental Science, Boston.

or less familiar with the important contagious eruptions of the skin. Such a knowledge would protect you from possible harm and would in turn tend to prevent you from infecting your patients.

Naturally, such a subject as I have chosen for my theme to-night would require hours rather than minutes for its proper presentation, but I must do my best in the half-hour at my disposal to give you some hints as to the clinical appearances of some of the commoner contagious eruptions about the head. I shall begin with the exanthemata.

Morbilli.—An eruption of measles is, as you know, usually preceded by catarrhal symptoms of the nose and eye and by headache, fever and digestive disturbances. When you see on the face of your patient a small or large, pink or red, blotchy, macular eruption; find in the oral cavity a furred tongue, congested fauces and a punctiform rash on the inside of the cheeks; and note rather weeping, red eyes and a running nose, you should immediately inquire as to the patient's general health, and the history of several days of the premonitory symptoms just described, plus these eruptive changes, will immediately suggest to your mind the presence of measles.

Varicella.—In chicken pox the prodromal symptoms are usually slight and ephemeral and cause the child a few hours or, at most, one or two days of mild headache, chills and rise of temperature. A characteristic of the eruption is that the lesions make their appearance over a space of one or two days so that you may see scattered over the upper trunk, face, and especially through the scalp macules, maculo-papules, papulo-vesicles, vesico-pustules and thin crusts. Nevertheless, I think the usual picture consists of a few thin-walled vesicles with a minute halo of erythema scattered sparsely over the face and chest; and if you find that a few days of slight general disturbance have preceded this cutaneous outbreak think probably of varicella.

Scarlatina.—The premonitory symptoms of scarlet fever are marked by their suddenness. Possibly a few days of indisposition and then sore throat and vomiting usher in the disease. Then the temperature rises precipitately to 102° F., or even higher; the face becomes flushed and restlessness and great thirst supervene. The following day the exanthem bursts forth, usually upon the trunk, thus reversing the order of precedence indicative of measles

where the facial eruption comes first. Over the body and extremities the rash develops rapidly and consists of a full red, so-called scarlet, macular eruption which often becomes universal, but close inspection, however, reveals the presence of innumerable red or even haemorrhagic punctae and in the severe cases numberless minute miliary vesicles. The sparseness of the lesions on the face and the practical exemption of the nose are points which you should remember. The mouth and throat, on the other hand, are intensely involved in the process. The tonsils are swollen and covered with a yellow-white exudate; the soft palate is highly congested, and the tongue, at first coated, is soon reddened and covered with numerous hypertrophied, scarlet papillae, producing the so-called strawberry appearance. All of these oral phenomena are what should put you on your guard.

Variola.—The incubation stage of small pox is rather long, usually from ten days to two weeks. The onset of the prodromal symptoms is very sudden and consists of chills, high fever, headache, extreme prostration, vertigo, epigastric tenderness, vomiting, backache and occasionally a morbilliform eruption. Then there is a lull in the subjective symptoms and on the third day, after the initial chill, the eruptive storm breaks. The cutaneous lesions appear at first on the face, especially about the forehead and mouth, followed by subsequent outbreaks on the scalp, neck, arms and hands, and within twenty-four hours the disease has involved the trunk and lower extremities. At first macular the lesions soon become papular and develop the characteristic "shotty" feel. On the third day of the eruption vesiculation appears and continues to increase until the seventh or eighth day, when unbilication, so characteristic of the disease, becomes pronounced. Suppuration has already supervened and, as you know, plays the chief rôle thereafter.

Varioloid.—This abortive form of small pox is really of more vital importance from a diagnostic point of view than variola vera for all of us should be competent to recognize the true type of the disease. The salient feature of varioloid is the mildness of the subjective and objective phenomena. The prodromal stage is shorter and less pronounced, the eruption is much sparser, the lesions run a shorter course and are more superficial and the consequent scarring is but slight.

It is the fortunate experience of most of you to encounter this

important class of diseases but seldom, nevertheless I have included them in my address to-night because you may meet them at any moment since many of the victims of these exanthemata may have insignificant or perhaps no prodromal symptoms or may experience such slight attacks that they become so-called "walking cases," and may come to your offices from time to time. All of these eruptions occur on the face and in the mouth and so fall distinctly under your ken.

It is because such mild cases of these highly contagious and dangerous diseases are so often unrecognized that I have given them precedence in my paper so that you who are thrown into such close contact with your patients and have such prolonged opportunity for the closest scrutiny and observation of them may be able to unravel their puzzling conditions and so prove of great service to the community.

The diseases which follow will perhaps come to your offices more frequently and for this reason you should become thoroughly familiar with them.

Syphilis.—You can all appreciate, I think, how difficult it must be to condense into a few lines the manifold appearances of this extraordinary and distressing disease which requires years for its proper treatment, at the end of which long period of trial nobody can say whether the victim is cured or not.

The primary lesion is naturally the first condition to consider. As you all know, it may occur any where upon the body, but of all the regions which concern us to-night, the lips, especially the upper,—and the tongue and the tonsil,—are, perhaps, the most frequently attacked. Extra-genital chancres appearing in these regions are usually large and raised and crateriformly ulcerated and angry. On the tonsil, however, the ulcer is sunken and deeply eroded. Whenever you see such striking figures, which are firmly indurated, which have lasted some weeks and have failed to respond to local applications and are attended by hard, isolated lymphatic glands, it would be well for you to be on your guard always.

The so-called secondary eruptions of syphilis are indeed numerous and varied. The face may bear many small or large red macules, or the dilatation of the vessels may have gone farther, permitting the escape of serum and blood cells, thus producing papules, or more rarely vesicles or bullae; or pyogenic infection may be superimposed and papulo-pustules or pure pustules may

result; or finally, there may be a polymorphous eruption consisting of numerous combinations of these many lesions to which, as time progresses, may be added the later phenomena of crusts and even ulcerations.

You may well ask how we can differentiate these eruptions from other cutaneous diseases. First in diagnostic importance, I should consider the great number of the lesions; then their uniform and generous distribution about the face, with perhaps a tendency toward aggregation about the mouth and below the nose; then a predilection toward the formation of circles and segments of circles; then their proneness towards moisture; and finally, the presence of other lesions about the body which we call pathognomonic of syphilis. I mean a hard sore which came some weeks previously, painless nodular glands, pharyngitis, headaches, malaise, et cetera.

Later in the disease we may find alopecia, which occurs as a thinning of the hair at the distal end of the eyebrows or a patchy loss of hair in the scalp, which at first is most marked over the ears and around the back of the head in the occipital line and which is well described as "moth-eaten" in appearance. This initial alopecia may progress much further and produce in the end a temporary but total baldness.

On the neck we may note a peculiar marbling of the skin which is rare at all times, but especially so in men. This syphilitic leucoderma is very striking and almost pathognomomic and consists of what seems like a café-au-lait or chocolate-colored skin interspersed with roundish, dirty-white, circular spots from 3/8 to 5/8 of an inch in diameter.

Last of all, but not nearly so seldom seen as the alopecia and leucoderma, just described, are the lesions in and about the mouth. Very often we note at the angles of the mouth a raised moist papule which bears a deep transverse fissure. This is highly suggestive of syphilis but may more rarely be due to some other infectious process. On the lips or the mucous membrane of the mouth or the gums we note dull, flat, dirty-white areas of more or less size, which we designate mucous plaques. Or again we find heavily swollen, turgid, easily bleeding gums, and foul breath, but it is always a question whether or not this stomatitis is not due quite as much to over-doses of mercury and improper care of the mouth as to the syphilitic process itself.

Such is my rapid sketch of syphilis and I think if you will bear in mind these few points you will at least arm yourself with suspicion which will surely guard you against a possible future infection.

Sycosis Vulgaris.—By this, perhaps, unfamiliar term, I mean one of the varieties of so-called barber's itch. You have often seen in the bearded regions or in the beards of men few or many pustules which are always follicular and which tend to run together and form areas of red, swollen, moist, crusting skin which may be localized in one spot or may extend over the whole bearded region. These infections are due to the ordinary staphylococci, and up to the advent of X-ray therapeutics, were notorious for their excessive obstinacy. This rebelliousness to treatment is due to the deep seat of the bacteria which spread up and down the length of the hair shafts which, you know, extend so far into the skin.

Impetigo Contagiosa.—This rather long name is given to a very common condition of the skin and consists of two types, the young and the adult. You are all familiar with the moist, round or gyrate, thick, syrupy crust, varying in color from the canary or orange yellow of pure coagulated serum, to the black of oxidized blood, which has been superadded. These crusts are very superficial, are surrounded by a red halo and are very apt to occur about the mouth, chin or ears of children and to be intimately associated with the presence of pediculi in the scalp. These lesions, produced probably by streptococci, are very contagious and personal or instrumental contact with them should be avoided. They begin as a small pink macule, soon become a raised, square or round, flat-topped vesicle and shortly subside into the usual crusting lesion.

The adult type, the impetigo circinata of the books, was practically unknown or unrecognized on the face up to ten or fifteen years ago. Now it is not uncommon to observe on the face of young men, far less frequently on the cheeks of young women, large and small, round, gyrate or serpiginous, grouped, flat-topped, sero-purulent bullae or crusts. These lesions are also very superficial, usually of short duration and their origin can frequently be traced to members of the family or to intimate companions. They produce at times very striking pictures.

Pediculosis Capillitii.—Except in your dispensary practice, I suppose, you are seldom brought into contact with head lice. But

they do occur in some inexplicable manner, even in women of most scrupulous cleanliness. Living pediculi are, of course, unmistakable, but sometimes the detection of their ova is not so simple a matter. These eggs are minute objects, easily visible to the naked eye, oval in shape, with hard, glistening brown envelopes, and are glued to the hair shaft with their long diameter facing the distal end of the hair.

Tinea Tricophytina.—Ringworm about the head and face is another condition difficult to describe in a few words, for its manifestations and varieties are many and complex to the uninitiated.

Within the last ten years, under the leadership of Sabouraud of Paris, great progress in our knowledge of these plants has been made and we now learn to differentiate clinically, microscopically and culturally, two distinct classes—the microsporon and the megalosporon, and I shall now describe the lesions produced by these two separate families.

The microsporon. This small-spored variety produces in Boston nearly ninety per cent. of the ring-worm of the scalp. The typical and very uniform lesion consists of one or more round bald patches covered with ashen-grey scales through which protrude numerous short stumps of hair. When these bald areas are near each other they eventually coalesce and form compound, gyrate and serpiginous outlines as do all eccentrically spreading circular lesions. Curiously enough this plant is never found on the scalp of any one over fourteen or fifteen years of age, and again it is practically limited to the scalp except in the rare instances when it spreads by direct extension to the adjacent skin and produces minute, whitish furfurations, surrounded by a delicate, pink halo.

The Megalospora. The large-spored plants are far more numerous botanically, and clinically generate numerous eruptions on the skin. According to their seat on or within the hair shaft they are known, perhaps somewhat arbitrarily, as ecto-or endo-thrix.

The endothrix group produces lesions on the skin, through the beard and in the scalp. In this part of the world the endothrix occurs most frequently as the causative agent of tinea circinata, the ideal "ringworm." We are familiar, I think, with these delicate rings on the skin with their more or less normal, smooth centres (unless re-infection has occurred) and their circular, raised, scaling, sometimes papular or vesico-papular peripheries. Remember

here again, as in all ring-shaped, peripherally-extending lesions, we are apt to get all sorts of variations from the original small circle.

The endothrix occasionally produces bald patches on the scalp (not above 12% in Boston) and the difference between these spots of alopecia and those produced by the microsporon are very great. Here we do not find the regular bald circles with ashen-grey floor and short protruding stumps, but we note a much more irregular loss of hair. There are alopecic spots from which radiate irregular bays which leave islands of healthy hair and the floor is covered with only a moderate amount of scaling, leaving minute areas of pink or red skin between. This variety of ringworm of the scalp may appear at any age of life, thus again differentiating itself from the small spored type which, you remember I told you, is never found except in childhood.

And lastly, the megalosporon endothrix may produce ringworm of the beard. This variety in the beard is quite different from that due to the ectothrix which will be described in a moment. Here there is a diffuse erythema and infiltration and scaling which cannot assume its proper circular outlines because of the hairs, I think; but if the infection is near the edges of the beard, then we often perceive the tendency toward the ringed formation. Follicular pustules may or may not be present but never tend toward agmination or kerion formation.

The ectothrix variety limits itself practically, here in Boston, to the production of two clinical types of disease—the kerion Celsi and the highly pustular agminate lesions of the hairy parts. The kerion of Celsus consists of a localized, round or oval, elevated, flat-topped plateau, honeycombed with follicular pustules. There is nothing quite like it in the whole domain of dermatology. The other ectothrix type constitutes another form of the popular "barber's itch." The great characteristic of this eruption is its purulent nature. The patient is usually a companion of horses. A few follicular pustules develop in the beard or elsewhere and are rapidly followed by others which soon coalesce and produce large lumpy, red nodules or even huge bunches, pierced by numerous pustular follicles from which most of the hairs have fallen. Rapidity of growth, predominence of pus and association with horses are the three cardinal characteristics.

This subject of ringworm is therefore a large one you see, but one which should be appreciated by you all.

Tinea Favosa.—Another hyphomycetic disease, to which you may be exposed in dispensary practice, but rarely, if ever, in your private work is favus. This disease is usually readily suspected by its yellow color and especially by its little yellow cups when they are present, but in my experience favic scutula are the exception and not the rule. The usual clinical picture is that of an indefinite area on the scalp of a Jewish or an Italian child which is covered with thick crumbling yellow-white scales. Underlying this area is a red, easily bleeding skin in which we know the hairs, sebaceous glands and subcutaneous fat are becoming atrophic or are already totally destroyed.

Erysipelas.—On account of the usual subjective concomitants of this disease, it is probable that you are not often thrown in contact with it, for a man with fever, headache, and general malaise will generally not seek further discomfort. Externally we see a sharply bounded, red, infiltrated, slightly elevated area with or without purulent vesicles or bullea. These areas are usually of a few days' duration, began near an orifice of the head, usually the nose, have spread peripherally and are sensitive to pressure. Considered with the general condition of the patient mentioned above it should not be a difficult diagnosis for us all to make.

Tuberculosis.—Another large subject for us to undertake for a moment's review. Lupus vulgaris is a disease seldom encountered in private practice, but among your hospital patients you must sooner or later meet with it and although but slightly contagious, nevertheless, might produce other clinical types of tuberculosis on your hands. The affection usually starts in childhood or early youth and appears as a rule near the nose or on the cheeks as a small, yellow-red, flat-topped, soft papule, which slowly extends and joins its neighbors until a red, boggy, rather sunken, atrophic area is formed with the characteristic, so-called "apple-jelly" nodules at its periphery. Other similar foci often develop on the other cheek, over the bridge of the nose and by their coalescence with the first produce the well-known bat-wing or butterfly formation so indicative of this disease or of its non-contagious namesake lupus erythematosus. Naturally lupus vulgaris is not limited to the nose and cheeks but may appear almost anywhere except in the scalp or pubic region where it is practically unknown. The peri-oral,

pre-auricular and sub-maxillary regions are all favorite sites for the disease and, again, what interests you particularly, it not infrequently develops on the gums, producing an indefinite swelling, accompanied by bleeding, soreness and some superficial erosion, very difficult to diagnosticate unless accompanied by cutaneous manifestations.

Scrofuloderma is the second type of skin tuberculosis with which we must all familiarize ourselves. This is essentially a disease of childhood, and consists of soft, red, boggy, swollen, tense skin covering underlying tubercular glands or bones. As these glands saseate and break down, so too, the overlying skin becomes more and more infected and finally ulcerates in separate foci, leaving irregular connecting bridles of red and abnormal skin.

Tuberculous Ulcer of the Tongue. Here is an affection which comes probably more to your notice than to mine. It is a distinctly uncommon condition in dermatological experience and occurs in consumptives as a deep, eroded, irregular, very painful, yellowish ulcer, with soft, pinkish-red, more or less undermined edges.

Of the many other forms and varieties of facial cutaneous tuberculosis, with their complicated, varied names, I shall not even speak, for they are all uncommon and are distinctly perplexing even to experts.

The list of every-day affections which are liable to come to your notice or to prove of possible danger to you is now completed and their description has been condensed as much as possible to conform to the time allotted me. There are other diseases, even more contagious and more dangerous to us all which occur about the face, but they are happily rare, and in closing I must content myself with a simple narration of their names so as to complete the list and satisfy the requirements of my title. These are actinomycosis, Aleppo-boil, anthrax, aphtha, blastomycosis, glanders, leprosy and la perlèche.

Gentlemen, I thank you for your patience in listening to this dry statement of facts and I trust that my words may sometime prove of assistance to you in guarding against infection of yourselves and of others.

NOTICE!

THE allied societies extend the distribution of the present issue beyond their own membership to a selected list of representative dentists who are presumably in sympathy with independent journalism.

It is hoped that those who receive the JOURNAL will aid it by subscription and by promulgating the ideas for which this journal stands amongst their local societies. Please inform Dr. F. L. Bogue, 63 West 48th Street, New York City, of any change in address.

HEART PATHOLOGY.*

BY C. M. GLAZIER, D. M. D., ROXBURY, MASS.

A knowledge of the symptoms of a diseased human heart having helped me in my practice of dentistry, I felt that a paper on that subject would be beneficial to the society. As a dentist's practice involves the administration of anaesthetics and contra indications for anaesthesia include pathological hearts, I believe the profession as a whole should be better versed in the knowledge of pathological heart symptoms.

One may benefit himself greatly in the estimation of his patients by being able by the use of the stethoscope, palpitation and physical signs, to determine the presence of disease or health, and we are many times confronted with that question. I do not think any of us enjoy having our patients first consult physicians when we can determine the case in hand for ourselves and have the pleasure of requesting a consultation.

This knowledge will also help us to avoid mistakes, easy to make; as many physicians never tell their patients that their hearts are diseased, for without that knowledge a person is happier. The following will illustrate. A young girl came to the office and wished to take gas for the extraction of a tooth. While getting ready to administer the gas, the young lady said, "Doctor, do you think I can take gas with safety? My physician has told me that I have a weak heart." There was nothing about this patient that would suggest heart disease. Her cheeks were red, and her whole appearance one of health.

I took her pulse more to assure her then myself, and to my surprise found it intermittent, which fact made me look for

* Read before Harvard Odontological Society of Boston, Mass.

other symptoms. This patient had aortic regurgitation, and I did not administer gas. The weak heart statement is common, sometimes it amounts to something, but most usually it does not.

That you may more clearly grasp the effect of valvular lesions upon the system, we will review the process of the blood circulation through the heart.

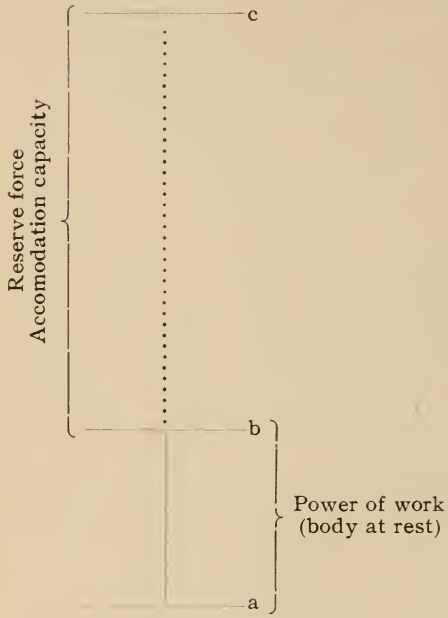
From the superior and inferior vena-cava the blood flows into the right auricle, from the right auricle to the right ventricle, from the right ventricle through the pulmonary arteries to the lungs, thence through the pulmonary veins to the left auricle; from the left auricle to the left ventricle; from the left ventricle into the aorta and general circulation. The aortic-mitral and tricuspid valves are the ones most affected. Incompetency and stenosis of these valves produce symptoms which may be recognized.

Valvular disease may be brought about by acute endocarditis (inflammation of the interior of the heart), also a slow, progressive sclerosis of the segments, resulting in a curling of the edges, which lessen the working surface of the valve. This may, of course, follow acute endocarditis, but is so often met with in strong, able-bodied men among the working classes without a history of rheumatism or special fibril disease, with which endocarditis is associated, that other conditions must be sought for to explain its frequency.

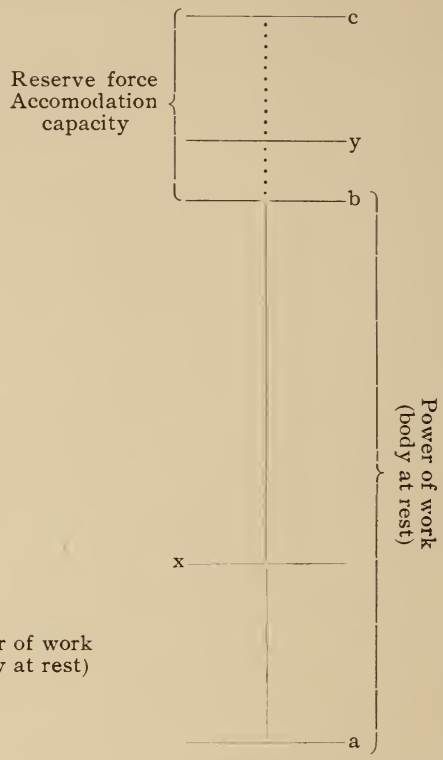
Of these, unquestionably, strain is the most important; not a sudden, forcible strain, but a persistent increase of the normal tension to which the segments are subjected, during the diastoli of the ventricle. The increase of this tension is brought about by heavy and excessive use of the muscles, and so often is aortic incompetency found in athletes, that this form of heart disease is called "athlete's heart." Alcohol is another factor, by its power of raising the tension in the aortic system. Syphilis is also an important factor. Also congenital malformation.

The direct effect of aortic insufficiency is the regurgitation of the blood from the artery into the ventricle, causing an over distention of the cavity, and the reduction of the blood column; that is a relative anaemia in the arterial tree. As an immediate effect of the double blood flow into the left ventricle, dilatation of the ventricle occurs and finally hypertrophy. In this way the valve defect is compensated, and as with each heart beat a larger

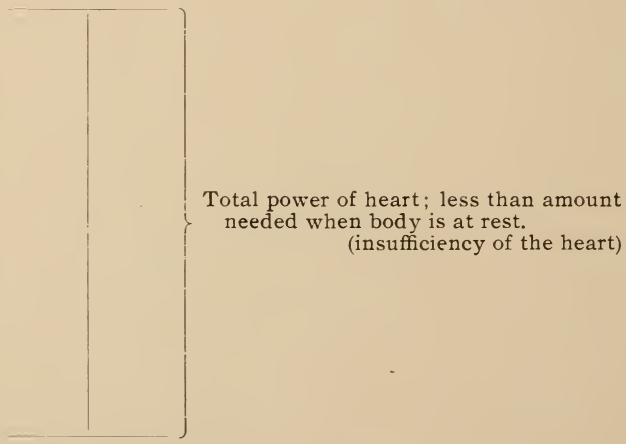
DRAWINGS ILLUSTRATING NORMAL HEART AND DISEASED HEART IN STAGE OF COMPENSATION AND UNCOMPENSATION.



I. Normal Heart.



II. Heart in valvular disease in stage of compensation.



III. Heart in uncompensated valvular disease.

amount of blood is propelled into the arterial system, the regurgitation of a certain amount during diastole does not, for a time at least, seriously impair the nutrition of the peripheral parts.

In this valve lesion dilation and hypertrophy reach their most extreme limit. This condition is often discovered accidentally in persons who have not presented any features of cardiac disease.

Headache, dizziness, flashes of light, and faintness on rising quickly are among the first symptoms. Pain may also become a troublesome and marked feature, although extremely variable in its manifestations. Palpitation and cardiac distress on slight exertion are experienced. Anaemia is common. More serious symptoms follow later, but the symptoms mentioned are those which are likely to come under our observation.

When compensation fails, other symptoms present themselves, as shortness of breath, edema of the feet, or irregular fever.

Inspection of the heart area shows a wide and forcible area of cardiac impulse with the apex beat in the sixth or seventh interspace. The impulse is usually strong and heavy. Occasionally two or three interspaces between the nipple line and sternum will be depressed with the systole, as a result of atmospheric pressure. Percussion shows a greater increase in the area of the heart's dulness than is found in any other valvular lesion. On auscultation can be heard through the clothing with a Bowles stethoscope, a murmur, during diastole, in the second right interspace, which is propagated with intensity towards the ensiform cartilage or down the left margin of the sternum toward the apex. It occurs during the time of, and is produced by the reflex of the blood from the aorta into the ventricle. The second sound is usually obliterated, but when the valves are only slightly curled, or if one cusp only is involved, both the murmur and the valvular sound may be distinctly heard. These heart murmurs are complicated with other sounds, but it is not necessary for the dentist to diagnose the particular lesion, although it will be helpful if he has an idea of the sounds that the different valvular lesions produce and the particular area in which they are heard. There are also various physical symptoms to be noted. In aortic incompetency the examination of the arteries is of great value. Visible pulsation is more commonly seen in the peripheral vessels in this than in any other condition. The cartoids may be

seen to throb forcibly, the temporals to dilate, and the brachials and radials to expand with each heart beat. To be mentioned with this is the capillary pulse, met very often in aortic insufficiency, seen in the finger nails, or by drawing a line upon the forehead, when the margins of hyperaemia on either side alternately blush and pale. In extreme grades, the face or the hand may flush visibly at each systole. Pulsation may also be present in the peripheral veins. On palpitation, the characteristic water-hammer or Corrigan pulse is felt. In the majority of instances the pulse wave strikes the fingers forcibly, with a quick, jerking impulse, and immediately recedes or collapses. The characters of this are best noted by grasping the arm above the wrist and holding it up. Moreover, the pulse of aortic regurgitation is usually retarded or delayed. There is an appreciable interval between the beat of the heart and the pulsation in the radial artery, which varies according to the extent of the incompetence. Occasionally in the cartoid the second sound is heard distinctly when absent at the aortic cartilage. It is at the carotid that we must listen for the second sound, for when heard it indicates that the regurgitation is small in amount.

"Osler's Practice of Medicine" tells us that it has not been sufficiently recognized by the profession at large that pure aortic insufficiency is consistent with years of average health and with a tolerably active life.

Aortic stenosis can usually be distinguished from aortic insufficiency by the musical quality of the murmur, accompanied by a thrill and the existence of the second sound.

The next important lesion that gives us plenty of symptoms is mitral insufficiency. The imperfect closure of the mitral valve allows a certain amount of blood to regurgitate from the ventricle into the auricle, so that at the end of the auricular diastole this chamber contains not only the blood which is has received from the lungs, but also that which has regurgitated from the left ventricle. This necessitates dilatation of the chamber, and as increased work is thrown upon it in expelling the augmented contents, hypertrophy as well. With each systole of the left auricle a larger volume of blood is forced into the left ventricle, which also dilates, and subsequently becomes hypertrophied.

During the diastole of the left auricle, as blood is regurgitated into it from the left ventricle, the pulmonary veins are less

readily emptied. In consequence the right ventricle expels its contents less freely and in turn becomes dilated and hypertrophied. Finally, the right auricle becomes involved, its chamber is enlarged and its walls increased in thickness.

During the development of the lesion, unless incompetency come on acutely in consequence of rupture of the valve segments or of ulceration, the compensatory changes go hand in hand with the defect, and there are now subjective symptoms. So also, in the stage of perfect compensation, there may be the most extreme grade of neutral insufficiency with enormous hypertrophy of the heart, yet the patient may not be aware of the existence of heart trouble, and may suffer no inconvenience except perhaps a little shortness of breath on exertion, or on going up stairs. It is only when from any cause the compensation has not been perfectly effected, or having been so, is broken abruptly or gradually, that the patients begin to be troubled. The symptoms may be divided into two groups, A and B. B does not concern us, as the patient will need the physician. Under A are minor manifestations while compensation is still good. Patients with extreme incompetency often have a congested appearance of the face; the lips and ears have a bluish tinge, and the vesicles on the cheeks may be enlarged, which, in many cases, is very suggestive. There is shortness of breath on exertion. This is one of the most constant features in mitral insufficiency and may exist for years, even when the compensation is perfect. Owing to the somewhat congested condition of the lungs, these patients have a tendency to attacks of bronchitis or hemorrhage from the lungs. There may also be palpitation of the heart. As a rule, however, in well balanced lesions in adults, this period of full compensation or latent stage is not associated with symptoms which call attention to an affection of the heart.

At the apex there is a systolic murmur, which, wholly or partly, obliterates the first sound. It is loudest here and has a blowing, sometimes musical character, particularly towards the latter part. The murmur is transmitted to the axilla, and may be heard at the back; in some instances over the entire chest. As a rule, in case of extreme mitral insufficiency from valvular lesion with great hypertrophy of both ventricles, there is heard only a loud blowing murmur during the systole. An important sign on auscultation is the accentuated pulmonary second sound. This

is heard to the left of the sternum in the second interspace or over the third left costal cartilage. The three important physical signs of mitral regurgitation are then: 1st. A systolic murmur of maximum intensity at the apex, which is propagated to the axilla and heard at the angle of the scapula. 2d. Accentuation of the pulmonary second sound. 3d. Evidence of enlargement of the heart, due to hypertrophy of both right and left ventricles.

Mitral stenosis presents a characteristic rough vibratory or purring murmur which terminates abruptly in the first sound. By combining palpitation and auscultation the purring murmur is found to be synchronous with the thrill and the loud shock with the first sound. This is a pre-systolic murmur, and is one of the most distinctive and characteristic of murmurs, and its presence is positively indicative of narrowing of the mitral orifice. The pre-systolic murmur may occupy the entire period of the diastole, or the middle, or only the latter half, corresponding to the auricular systole. The second sound in the second left interspace is loudly accentuated, sometimes reduplicated; it may be transmitted far to the left and be heard with great clearness beyond the apex. Another point to be noted is the unusual sharp, clear first sound, which follows the systolic murmur. These physical signs, it is to be borne in mind, are characteristic only of the stage in which compensation is maintained.

Tricuspid regurgitation is usually secondary to lesions of the valves of the left side, particularly the mitral. It is met with in all conditions of the lungs which cause obstruction to the circulation, particularly with chronic bronchitis. The symptoms are those of obstruction of the lesser circulation, with venous congestion in the systemic veins.

The signs of this condition are: Systalic regurgitation of the blood into the right auricle and the transmission of the pulse wave into the veins of the neck. If the regurgitation is slight, or the contraction of the ventricle is feeble, there may be no venous throbbing, but, in other cases, there is marked systolic pulsation in the cervical veins. It may be seen in both the external and internal veins. Marked pulsation in these veins occurs only when the valves protecting them become incompetent. Slight oscullations are not uncommon when the valves are intact. The second important sign is the occurrence of a systolic murmur of maximum intensity in the lower sternum. It is usually a soft,

low murmur, often to be distinguished from a coexisting mitral murmur by difference in quality and pitch, and may be heard to the right as far as the axilla. Together these two signs positively indicate tricuspid regurgitation.

Tricuspid stenosis is almost always secondary to lesions of the left heart. Pulmonary stenosis is almost invariably a congenital anomaly. Physical signs are very uncertain. The murmur is heard in the pulmonary region, and it is difficult to distinguish from aortic stenosis, except that it is not transmitted into the vessels. In pulmonary insufficiency the murmur is similar to that produced in aortic insufficiency. The absence of the vascular features of aortic insufficiency is suggestive.

A perfect understanding of the action of the heart under the head of the "Neuroses of the Heart," which includes palpitation and other irregularities, is necessary in our diagnosis. Palpitation is to be understood as follows: The term is properly limited to irregular or forcible action of the heart, perceptible to the individual. The consciousness of the cardiac pulsations, which may be perfectly regular, or orderly, is not palpitation, but a suggestion of debility. In the milder form, such as occurs during a dyspeptic attack, there is a slight fluttering of the heart, and a sensation of what patients sometimes call, "goneness." In the more severe attacks the heart beats violently, its pulsations against the chest usually are visible, the rapidity of the action is much increased, the arteries throb forcibly, and there is a sense of great distress. In some instances, the heart's action is not at all quickened. The most striking cases are in neurasthenic women, in whom the entrance of a person to the room may cause the most violent action of the heart and throbbing of the peripheral arteries.

The physical examination of the heart is usually negative. The sounds, the shock of which may be very palpable, are on auscultation clear, ringing, and metallic, but not associated with murmurs. The attacks may be transient or last for an hour or more.

Various Heart Beats and Their Significance.

1st. The paradoxical pulse in which the beats during inspiration are more frequent, but less full, than during expiration. This is found in weak hearts, but it may also occur normally from the influence of the respiration upon the heart.

2d. The intermittent pulse.

3d. The alternate heart beats, expressed in the peripheral arteries by alternate full and feeble pulse-beats.

4th. The bigenuinal and trigenuinal pulsations, occurring when two or three beats follow each other in rapid succession, each group being separated from the following by a longer interval.

5th. Delirium cordis, in which the heart's action is wholly irregular.

6th. Foetal heart rhythm, the sounds being almost identical.

7th. Gallop rhythm, in which the sounds resemble the foot-fall of a horse at canter.

The significance of an irregularity is not always easy to determine. There are one or two cases in whom the heart's action is irregular and the persons have good health without cardiac or arterial disease. The bigenuinal and trigenuinal pulsations are found more frequently in mitral disease than in other conditions. Delirium cordis is associated with valvular lesions and foetal heart rhythm with dilatation. I would like to call your attention to the pulse when arterio-sclerosis is present. The distinction is clearly given between a pulse of high tension and a sclerosed artery. The pulse of increased tension has the following characters: It is hard and incompressible, requiring a good deal of force to overcome it; it is persistent, and in the intervals between the beats, the vessel feels full and can be rolled beneath the finger. These characters may be present in a vessel the walls of which are little, if at all, increased in thickness. To estimate the latter, the pulse waves should be obliterated in the radial artery and the vessel wall felt beyond it. In a perfectly normal vessel, the arterial coats, under these circumstances, cannot be differentiated from the surrounding tissue, whereas, if thickened, the vessel can be rolled beneath the fingers.

CONSERVATION OF THE DENTAL PULP.*

BY DR. LOUIS JACK, OF PHILADELPHIA, PA.

Mr. President and Members of the Institute:—My appearance before you in defence of, and in elucidation of conserva-

* Read before The New York Institute of Stomatology, February 6, 1906.

tive treatment of the dental pulp, is in response to your request, with the trust that my paper may be useful to those who may not be familiar with the important chapter on this subject in the American Text Book of Operative Dentistry.

The principal function of the pulp of the mature tooth is to maintain the vitality of the dentine for the purpose of sustaining the cohesive force of this structure. This is evident, for whenever from any cause a tooth has been deprived of its central source of life, sooner or later, according to the inherent strength of the dentine and the degree of muscular force applied, it is impaired, or its crown is destroyed by fracture. This danger is greater with the masticating teeth than with the incisive ones, because of the powerful stress to which they are subjected. Concerning the incisors, however well the devitalization and removal of the pulp may be accomplished, the appearance of the organ is seriously affected, since some loss of the natural tint occurs, and the likelike lustre becomes diminished.

If any line of treatment may be formulated, promising the avoidance of these unfortunate results, it must be entitled to consideration. Notwithstanding it may appear a trite subject to many persons, it may not be out of place to instruct others whose minds are not made up, and to protest the opinion of those who maintain that the dental pulp has no further use, after the maturity of the teeth has been reached.

It is not necessary here to define the anatomical elements of the pulp, as this is familiar knowledge.

The pathological tendencies of a pulp under irritation are of importance; they are:

(1) To hyperaesthesia.

(2) To circumscribed hyperaemia under continued irritation.

(3) To congestion,—mechanical hyperaemia—which, if continued, terminates at length in stasis by restriction of the circulation.

(4) To prolification of the deeper elements of the tissue as the result of latent congestion.

A further important question having weight in any consideration of the pathology of the pulp, is the danger of invasion by some of the forms of bacterial life; notably the microccii, which have been concerned with the caries of the dentine. In explication

of this I cannot do better than to quote from Page 386 of the third edition of the American Text Book:

"A further pertinent consideration bearing upon the various conditions of the exposed pulp, as shown by the symptomatology, is here in place. It has already been indicated that when the exposure of the pulp to irritation has been slight—that is, where this organ has been measurably protected from exterior influences by the covering layer of incompletely decalcified dentin—the pulp is ordinarily but slightly affected. When the denudation has become complete, and the amount of pulp surface in contact with the carious matter has become considerable, and further, when by the solution and displacement of the carious matter the influence of the oral contents is direct, the disturbances of the pulp become progressively increased. In the light of present knowledge of these injurious influences, the causes of their operation must be attributed to infection of the pulp by the various minute organisms which have their habitat in the mouth. The pulp tissue becomes infected in the degree to which it is exposed and in proportion to its power of resistance to the pathogenic character of these forms of life. It is axiomatic that the activity of inflammatory processes is usually in proportion to the degree and the kind of infection. Therefore it must be held here as elsewhere in surgical procedures, that the existence of infectious influences and their control have to be kept clearly in view.

This consideration enables us to understand the causes which render conservative treatment inoperative, in cases in which there has existed for a considerable period the opportunity for active invasion of the pulp by micro-organisms. When these deleterious influences have long continued, the deeper tissues of the pulp, as before stated, became involved; the chief factors producing the disturbed state eventuate in a suppurative condition. This state of the organ clearly indicates invasion by pyogenic germs, the inflammatory processes attending this condition being superinduced by the peculiar irritation caused by the infection. This results, in some instances, in stasis followed by gangrene; in other cases, where the arterial tension has not been great, in suppuration. The character of the suppurative process, rarely, is a circumscribed abscess of the pulp, the more common form being by progressive and destructive ulceration of the organ."

An important preliminary consideration with relation to the

treatment of pulps under irritation is the indication furnished by what has been designated the "temperature sense of the teeth." This in health greatly varies with different individuals. Some tolerating a temperature of 32° Fah. or lower than this without irritating, others being affected by cool water, and will state they have to use tepid water for irrigating the mouth. The ascertained degree of cold and of heat producing some thermal irritation is designated the *normal rate*. How various this is may be seen by the tests carefully made of twenty-three persons. To heat the variation was from 152° Fah. to 118°. By cold from 41° to 74°. The plus (+) sign is used when the rate is above 100, the minus, when below.

The signification of the value of the *normal rate* will appear when it is applied to practical treatment. Here it may be stated

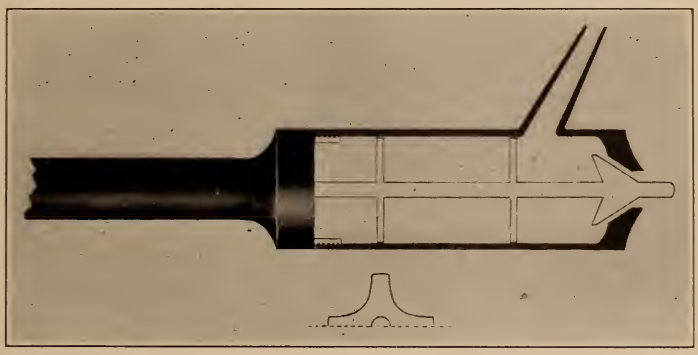


Fig. 1.

that with a normal rate of + 154 — 41, how much less danger of subsequent irritation is likely to occur after the treatment is completed, in comparison with a case where the normal is + 118 — 74. The range of tolerance in the first is 111°, of the other it is 44°. It is evident that when the range of tolerance is wide, the chance of favorable treatment is greater than when this is small.

To ascertain the normal rate it is simply required, where the incisors are free of fillings and the cementum unexposed, to apply a continued stream of water from a syringe upon one or more teeth, commencing at 80° and successively diminish the temperature to the degree where slight irritation is indicated, when the minus rate is recorded. To find the plus rate we commence with a temperature of 120° and gradually increase the heat until irritation

appears, when the plus rate for the same person may be recorded. With sensitive subjects this method is so definite, the normal may be determined to one degree. In this connection it should be stated that the gingiva is with some persons pained at 130°, when it may be necessary to isolate some individual tooth.

To facilitate the temperature tests, the syringe should take in water by a large orifice and discharge it by a small one, such as the Laskey, or better, the Woodward self-filling syringe. (Fig. 1.)

The arrangement for making these tests of temperature is simple. It consists in the use of a vessel of hot water and one of ice water with a tumbler to which, by additions of cold or heated water, to enable one to readily attain any gradation of temperature desired.

The ascertained normal rate becomes an important preliminary procedure to the careful treatment of the exposed pulp. It is also a control to determine the probability of exposure, and to determine in occult cases of neuralgic or reflected pain whether or not the cause is seated in the teeth, and if so, which is the affected one. Where a neuralgic condition is dependent upon either gout or malaria, the teeth are not responsive beyond the normal of the person so affected. It is not infrequent that filling, after filling is removed in a vain effort to diagnose a case which might easily be decided by the outlined tests.

EXPOSURES OF THE PULP.

In a systematically conducted practice, exposures in initial cavities are usually of a simple character, as they should be discovered at an early stage. As an evidence of the tolerance of the pulp to the close approach of caries there is in many instances no evidence of encroachment as indicated by pain. Sometimes a considerable part of the pulp is in contact with decalcified dentine without sensation.

In the early stage of actual pulp exposure, the elements of this organ which may be affected are the peripheral nerve filaments, which have become hyperaesthelic from the hyperaemic state of the surface immediately adjacent to the point of encroachment. At this stage the pulp becomes impatient of cold, with some reflected pain in other branches of the trigeminus. Later, unless these conditions be subdued by suitable treatment, indications of congestion appear, as shown by sensitivity to heat. At length

objective symptoms become apparent, as indicated by soreness upon pressure and much increased intolerence of heat.

With relation to diagnosis of the pathological state of the exposed pulp, and as to the propriety of attempting conservative treatment, careful analysis should be made, to guide when the indications favor conservative treatment, and to avoid the embarrassment of probable failure. To aid in this discrimination, the following summary of elicited condititons is important to be held in view:

(*a*) Where no previous disturbance can be found.

(*b*) Where the tooth is impressed only by application of cold substances.

(*c*) Where in addition, reflected pain in related parts has been observed.

(*d*) Where the tooth has become subject to irritation by heat.

(*e*) Where continued objective disturbances appear, such as soreness to mechanical contact, or of local spontaneous pain with some throbbing.

Classes *a, b,* and *c,* may be considered amenable to treatment, and also problematically, class d, when taken in the early appearance of the stated indications. Class *e* must be considered as eliminated from the field of conservative treatment.

When cases in the classes *b, c,* and *d* take on similar disorders as those of class *e,* after they have been placed under treatment shortly to be described, generally have passed beyond the chance of benefit by palliation, and require devitalization. Occasionally cases in *c* and *d,* suddenly become seriously deranged, and fail, perhaps, because we have not considered the degree of infection, and have not sufficiently carried on disinfection.

The first physical condition favorable to success is that of good constitution. As to temperamental indications, when the subject is in health, the lymphatic alone should be excluded, and particularly the bilio-lymphatic. In reference to the pulps of these, the probabilities are that in the sluggish condition of their tissues, the parts involved are early invaded by bacteria, and such changes have taken place in the pulp as to place them beyond treatment. The most promising cases are for persons of active temperaments, having good circulation, thin skins, healthy gums, and limpid oral secretions.

PREPARATION OF CAVITIES WITH REFERENCE TO THE PROBABILITY OF PULP ENCROACHMENT.

In approaching the preparation of cavities of medium size, the probability should be assumed that the pulp has been invaded by the carious process, and great care should be used to avoid injury to it, or cause compression thereto; the latter being the most serious injury that can occur to the pulp, from which it rarely recovers if serious infliction of this nature takes place.

After the cavity is opened to give access to all its parts, the removal of caries should be conducted along the lateral and cervical margins. This is best done with sharp, thin-edged well-adapted excavators. When the pulp wall is reached, the remaining layers of decay may be peeled from the pulp wall without danger. If the pulp proves to have been invaded, actual contact with it should be sedulously avoided. To do this often requires he greatest care and the most delicate handling of the instruments.

In some instances the pulp may not appear to be denuded, when it is actually slightly exposed. To determine this a fine pointed delicate explorer is slightly passed over the pulp wall in parallel lines in two directions, when the fact may be determined by the difference in resistance, or the cornua may be touched without sensation to the patient.

When the cavity has been cleansed with tepid water, the surface should be disinfected. I have found the most useful means to be a solution of hydronaphthol with alcohol. This should remain for a few minutes, during which the selection of the cap and preparation of the capping paste is being made.

In classes *c* and *d*, where indications of active hyperaemia are evident, I have found much benefit from filling the cavity with a paste composed of Eugenol and zinc oxide, with which the cavity is to be filled for several days. The effect of this is most salutary. In somewhat wide exposures it may be necessary to use a broad cap containing a thin paste of the eugenol and zinc oxide, and then fill the remainder of the cavity with a thick mixture of the same, which becomes sufficiently hard as to endure for several weeks.

Our attention was called to the value of this combination by Dr. Luckie, whose paper will be found in the International Dental Journal, Vol. XXI, page 652.

Incidentally it should be stated that this paste, applied as above, is valuable as an application to pulps requiring devitalization,

where they are in a state of considerable congestion, which forbids the immediate use of devitalizing agents. The influence here is profound after a period of several days.

The analgesic properties of Eugenol render it most useful for the above stated purposes.

The *protective cap* with the contained paste is a prominent and essential feature of conservative treatment of the pulp. The first purpose of the cap is to prevent the possibility of compression. The use of the paste avoids the existence of space between the cap and the pulp wall, and provides the required therapeutic properties conducive to secure quiescence of the protected pulp.

The cap should be of concave discs of metals of various sizes and forms adapted to the exigencies of the cases as they occur. The most convenient metal I have found is aluminum. From thin plate, of which by means of the hollow punches of the hardware shops, the caps may be cut out upon the end grain of a block of wood.

The paste may be composed of "oil of cloves," 66%; carbolic acid, 33%, combined with zinc oxide, of a consistency which will sustain a globular form, and at the same time be capable of flowing out at the margin of the cap, when this is inserted and pressed to place. The combination may be made with Eugenol, but the cap is more liable to displacement in the subsequent steps of filling the cavity. The first formula I have used for many years in consequence of successful results with it.

It is essential, in view of the liability of zinc oxide containing arsenic, that it be pure. Hubbuck's preparation is made by burning pure zinc in an atmosphere of oxygen gas, and is therefore unquestionable.

PLACEMENT OF THE CAP.

To all aspects of the anterior teeth and mesial surfaces of posterior ones, little difficulty need be found in safely placing a cap, where it may be done with finely pointed plyers. In distal aspects of molars, it may be perplexingly difficult where the cap has to be poised on an applicator of suitable form, touched with some slightly adhesive substance.

The cap being placed, the cavity should be temporarily filled for a considerable period with a non-conductive plastic material. For the posterior teeth, a thin matrix adjusted to fit the cervix, is

a necessary requirement. This should be withdrawn laterally. When phosphate cements are used, a layer of gutta percha should be packed at the cervical border to avoid waste of the cement at this part.

The length of time temporary fillings should remain, depends upon the establishment and continuance of quiescence. My usual course is not to disturb a case for several years, except to renew a wasted filling without disturbing the cap.

In the class *a*, where no previously observable disturbance had appeared and when the thermal reaction is slight, it frequently is safe to fill with metal using the precaution of a broad cap. In some such cases I have filled with gold where the patient has not been aware of the condition of the case and where no after pain has taken place. It is rare, however, when this should be attempted.

It is clearly within the probability to state that continued exposures with the consequent irritation as evinced by the thermal tests become more and more precarious, according to the extent of denudation.

It cannot be laid down with any definiteness the character of the changes which take place in the pulp when, after many years, the cases have continued entirely comfortable. In many instances I have found the point of exposure occluded by secondary dentine. In others, after fifteen years of absolute quiescence, the pulp has not become protected in this manner.

That some pulps have high recuperative power is illustrated by one treated by me in 1866 on the occlusal surface of a lower molar. In a few years, on opening to replace the filling, a considerable surface of secondary structure was evident, later on the inner wall broke down in such manner as to preclude filling again. In 1897 a new exposure occurred on the distal aspect, which also became so completely ossified as to bear considerable cutting.

Charles Tomes reports a case of a lower bicuspid where a broadly exposed pulp overlapping the adjacent margins had become spontaneously calcified. In many instances in my experience I have had full assurance of calcified protection.

AFTER TREATMENT.

It is not unusual for cases in classes *b* and *c* to require some subsequent treatment. For this reason close observation should

be maintained for some time. It is presumed the judicious operator has made a careful selection of cases and that he will decide at the time of concluding the filling from the recorded conditions the probable prognosis of each one. As indicated above, some of the promising cases may not be satisfactory for the reason that the actual condition may not have been clearly made out. In all cases the patient should be required to return for observation, particularly if the least increase of impatience to cold applications should occur. It is advisable to have control for a fortnight at least.

In any case where there has existed reaction to cold, or when this should afterwards appear, and especially if there should be the least reflected pain in the region of the ear, some after treatment should be resorted to. This consists in the application to the gums over the tooth of Tr. Aconitum Rad, two parts, Chloroform, one part. Aconite is selected for the reason that it appears to have control of the arterioles by which the opical determination is diminished. Chloroform facilitates the absorption of the remedy. The mode of making the application is important. A pledget of cotton, to cover a surface of three-fourths of an inch, is saturated with the medicament, when it is squeezed of excess to prevent any from flowing into the mouth. Before the pledget is placed the gum should be rubbed free of the coat of mucus, to allow actual contact to take place. The pledget should be retained for from fifteen to twenty seconds. If counter irritation be desired, a longer time is required. More effective counter-irritation may be produced by superficially scarifying the gum.

The effect of the remedy continues for two days, but may be repeated at shorter intervals, in some cases on the inner surface of the gum and repeated on the outer surface. Meanwhile the temperature test indicates the state of the pulp.

When necessary, this treatment should be persisted in until the range of tolerance becomes markedly greater. The patient, meantime, should avoid extremes of heat and cold. The control period in favorable cases usually is not longer than a fortnight.

In all cases, except of class *a*, the after treatment should be pursued from the start until the individual shows that the degree of tolerance approaches the normal range of tolerance.

An interesting phenomenon is not uncommon during this after-treatment. When the heat rate of a disturbed pulp commences to fall the cold rate at first rises, when there may be no change of

the range of tolerance, but as the case yields to the remedial action, the range of tolerance increases in both directions. Therefore, if tested only by cold, the progress may be misinterpreted.

The following records of two cases of post treatment illustrate this point:

Mrs. W. H. J., normal $+130°-55°$ disturbed rate $+108°-73° = +112°-76° = +120°-74° = +124-74° = +128°-67° = +130°-66° =$

Range of tolerance at first, 35°; at ending, 64°.

Mr. J. A. W., $+120°-84° = +120°-86° = +°128°-86° = +124°-76° = +134°-70° = +140°-67° = +142°-66° = +142°-64° =$

Range of tolerance at first, 36°; at ending, 78°.

These cases also show the effectiveness of the medication.

Finally, it may be stated in this connection, that success in conservative treatment of the pulp, other things being equal, is in proportion to the interest and intelligence of the patient.

In the foregoing portions of this paper, accidental, nearly and probable exposures, have not been considered. Of the first, in case the penetration has been inflicted by aseptic instruments, they come under class *a*, and present no difficulties. Of the second, I persistently place over the pulp wall a non-conductor of some kind to eliminate the possibility of thermal shock,— usually a broad cap, including a consistent paste; in large cavities, phosphate cement. Concerning the latter there are instances, where, from the character of the manifestations, there are indications of irritation, but no evidence of actual encroachment. My practice has been to use the described paste, made more stiff than as defined. I am convinced more pulps die under large metal fillings in cases of proximate exposure than when full but slight denudation of the pulp has occurred, when rationally protected.

Finally, since the year 1866, my constant course has been to attempt the preservation of the vitality of the pulp whenever the presented conditions have offered an opportunity for so doing. Previously to that period, I followed the then usual procedure of devitalization in all cases of exposure.

REGULATING APPLIANCES.*

BY L. M. COWARDIN, M. D., D. D. S.,

Dean of the Dental Department of the University College of Medicine, Richmond, Va., and Prof. of Oral Surgery.

To The New York Institute of Stomatology:—

GENTLEMEN:—You have done me the honor of inviting me to be with you to-day and, in turn, I take much pleasure in presenting for your study and critisism two orthodontic appliances which were suggesed to me by the treatment of two special classes of cases, viz.:

1st. Those cases of departure from the normal plane of occlusion in which the inferior incisors occlude nearly, if not quite, with the gingivial margins posterior to the superior incisors, and which are also accompanied by protrusions of the crowns of the superior incisors, and a depression of the bicuspids and molars.

2nd. Cases of unilateral prognathism (Jackson) or what may also be called crossed occlusions—when on one side of the superior arch the teeth are normally occluded, while on the other side, at the median line, or at any point posterior to it, the occluding surfaces of the teeth are shifted within the normal occlusal line.

For the correction of the first class of cases, I present appliance No. 1, which is intended to extrude the bicuspids and molar teeth from their alveoli, thus opening or lifting the bite and, at the same time, making it possible to carry back the prominent crowns of the incisors and everting their apices. The former is partially if not wholly accomplished by the same appliance, and if only partially done this part of the operation may be completed by using a bit and head cap in addition to and in conjunction with the appliance. No. 1 consists of four bands for the four incisors, a plane on their lingual surface and four square tubes, four square wire springs—one for each tube—and two Mattison caps, swaged

*Read at a special afternoon meeting of The New York Institute of Stomatology, February 6, 1906.

from one piece of metal, of sufficient length to include the number of teeth which it is desired to have extruded from their alveoli.

To construct this appliance make the four bands from German silver about 36 to 38 gauge in thickness, fitting them to the teeth in the mouth as this insures accuracy in fit. After all the bands have been soldered, place them in position upon the crowns, which they should fit loosely enough to slip off when taking impression. With the bands in place, take an impression of these teeth, and when it is removed see that all the bands are in perfect place within the impression, and from this make a cast with one of the invest-

Fig. 1. (Appliance No. 1.)

ment compounds not easily disintegrated by heat. The bands are then soldered together and returned to the teeth in the mouth when a second impression is taken which should include all the teeth in the arch. Upon taking it from the mouth, it should be seen that the bands are in correct position before the second cast is made, which should also be of one of the investment compounds that does not easily disintegrate under the heat of soldering. An impression of the lower arch should also be taken and a model made of plaster. The two models should then be carefully articulated, just as the teeth are in the mouth, and waxed together to prevent displacement. In this state the two casts are to be placed in a plain articulator, and when this has been done the bite may then be opened

to the extent that it is desired it shall be when the case is corrected. Now, file and fit to the lingual surface of the bands a piece of German silver plate, about 24 gauge, and extend it back far enough to occlude with the inferior incisors. The square tubes are now placed in position. They should be long enough to receive snugly wire drawn through hole 28 French draw plate and when in place should extend back to the space between the canine and first bicuspid. The plane and tubes are now to be waxed in position. Place

Fig. 1. (Appliance No. 2.)

the tubes on either side of the canines, but not touching them, and in such relation to each other as to allow the wire spring to parallel the arch. The plane is now waxed in place, each end resting upon the lingual tubes. The whole is now invested in a manner that will permit soldering all parts together. The Mattison caps are to be swaged from German silver, about 36 gauge, and, as stated before, of one piece of metal long enough to include the teeth which it is desired shall be extruded. These caps are then to be carefully fitted to the teeth in the mouth, and, finally, hooks which are to receive the spring wires are to be soldered to caps. The appliance is now ready to be placed in the mouth. First

cement the caps in place and, next, cement the bands carrying the tubes in position. Allow the cement some hours in which to set before inserting the springs. Before the springs are inserted, they are to be bent in a manner which would require moderate force in carrying them upward and into the hooks on the caps. It will now be seen that the pressure exerted by the springs will operate along lines which will cause the roots of the incisor teeth to be everted and their crowns depressed, and also cause the extrusion of the teeth upon which the Mattison caps are cemented. The time required for the accomplishment of results desired will necessarily be varied according to the peculiarities and conditions associated with each case. The appliance itself may be made to act as a retainer by simply arranging the springs so that they will be inactive, and the plane will then maintain the open state of the bite. In from thirty to sixty days the whole appliance is removed and what is known as a "*bite guide*" on the four incisors is to be substituted and worn for five or six months. This "bite guide" is constructed by fitting four new bands to the incisors and soldering a grooved plane to their lingual surfaces in a manner which will cause the inferior incisors to occlude within the groove, thus insuring stability of the corrected deformity, both as regards the open bite and the depressed crown of the superior incisors.

Appliance Fig. 2 consists of two Mattison caps, one flange, two short tubes and an expansion bow. It is constructed by taking full impression and making casts of both arches, and swaging a cap long enough to include and fit the bicuspids and molars that are fully erupted on the normally occluded side of the superior arch. Another cap is now swaged to fit the occluding teeth; but in this case the buccal surface of the cap is to be removed, only leaving the occlusal and lingual surfaces to constitute this cap. The third cap is then swaged of proper length to include the teeth which are to be moved to their correct position. The two models are then articulated as the teeth are in the mouth, and waxed, or held in this relation, by other means while being placed in an articulator. When this is done place the first cap swaged in position and the second or partial cap also. Now, put a strip of softened wax upon the occlusal surface of either one of the caps, then close the articulator until the bite on the opposite side is yet open enough to allow the cusps of the superior teeth to be moved freely over the cusps of the inferior teeth. The two caps which are

now stuck together by the wax are removed from the model and invested, the wax removed, and silver solder made to take its place. A tube is now soldered to this double cap at a point where the expansive force exerted by the bow will most likely be distributed equally to the teeth under the cap. The tube on the cap for the other side of the arch may be soldered at a point where it will put greatest force on the teeth to be moved the greatest distance. The bow for expanding is then fitted to the tubes while the caps are in place upon the models, and it may be made of spring wire about twelve gauge, or such size wire as the operator may deem necessary to accomplish the work, since cases vary in their needs along this line.

The modus operandi of this appliance is at once apparent and simple. The main feature demanding attention is the double cap, or the cap and flange, which prevents the disturbance of the articulation on the normally occluded side and, at the same time, opens the bite, affording free passage of the teeth to be moved. The cap and flange also afford a masticating surface. As a retaining appliance in these cases, a simple plate to cover the vault of the arch, to be worn for a few weeks, will suffice, since teeth once normally articulated, in these cases of cross occlusion, have but little tendency to return to their abnormal position.

A METHOD OF CONSTRUCTING PORCELAIN INLAYS IN RESTORING CONTOURS OF INCISORS, USING A SECTION OF PORCELAIN TOOTH IN COMBINATION WITH HIGH OR MEDIUM FUSING BODIES.*

DR. KARL C. SMITH.

I. In the preparation of the cavity, the lingual wall should be cut away freely so that the filling, when completed, may slip into place from the lingual toward the labial wall. By so doing, a strong dovetail may usually be made of the anchorage portion of the filling, which will rest solidly against the gingival and labial walls in such a way as to stand the strain of mastication with

* Read before The New York Institute of Stomatology, at a special afternoon meeting, March 6, 1906.

least danger of dislodgement or fracture. It also permits of comparatively easy adjustment and removal of the matrix without separation of the teeth in the majority of cases.

2. The cavity having been prepared, the matrix (I prefer 1-1000) of platinum is fitted and removed.

3. A plain plate or rubber tooth is now selected which corresponds in color, shading (from gingival line to incisal edge)

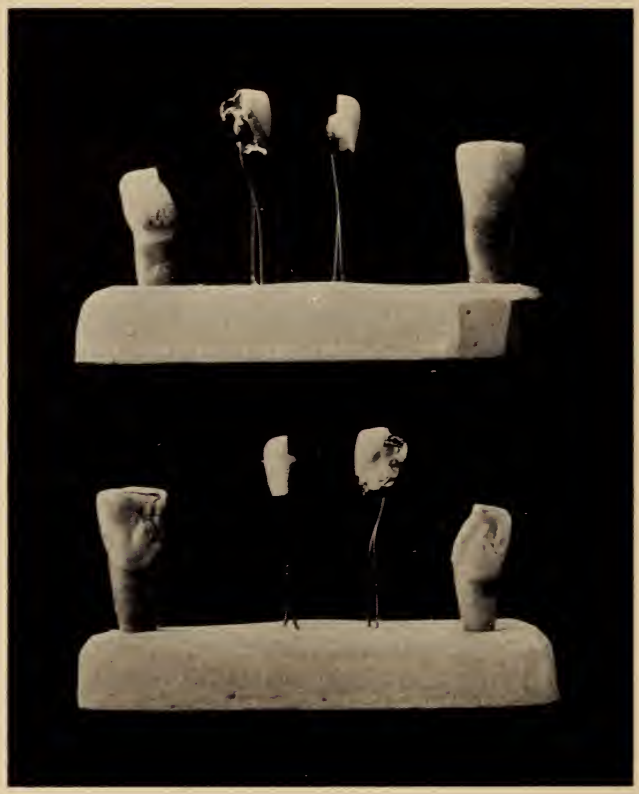


Fig. 1.

and cotour, with the tooth to be repaired, and from this tooth a section is cut which, if placed in position on the tooth to be repaired, would restore the contour. This cutting is done by first marking the outline with a thin copper diamond disk and then using excising forceps. The section is then ground to an approximate fit—but not too closely.

4. The next step is to fill the matrix flush with the porcelain body—high or medium fusing—and fuse to a biscuit.

5. Now place the matrix, which is filled just flush with the borders, in the cavity, burnish edges carefully and attach the contour section previously prepared to the matrix—in proper position—by a bit of sticky wax. Remove the whole from the cavity and fill in with body of just sufficient bulk to hold the contouring piece in position and fuse. On removing from the furnace, the wax will have burned out and the section of tooth will be attached to the body previously fused in the matrix. The filling may now be placed again in the cavity and edges of the matrix reburnished —if necessary—then removed—contour thoroughly filled out lingually and baked to a proper glaze.

6. The advantages of this method of construction are: First, A good color, which may be absolutely determined at the beginning of the operation and which does not change from beginning to end of same.

Second—The restored section is very strong and shapely.

Third—A disguising—more or less—of the line of union between tooth and contour.

The New York Institute of Stomatology.

A meeting of the Institute was held at the Chelsea, No. 222 West Twenty-third street, New York, Tuesday evening, January 2, 1906, the President, Dr. S. E. Davenport, in the chair.

The minutes of the last meeting were read and approved.

Communications on Theory and Practice.

Dr. C. O. Kimball:—I wish to report a case in hopes that some one may throw some light upon it. A right lower incisor, which had been dead and the root filled and behaving itself for over twenty-eight years, I noticed was split from a point just at the margin of the gum near the center of the tooth and following down the root indefinitely. Examining it carefully, I noticed that the little foreign matter around the margin of the gum, and in the space between the fragments, was pulsating as if there was a lit-

tle aneurism or pulsating tumor at the root. This pulsation was quite marked. The tooth had given no discomfort whatever. I am trying to draw the fragments together. If it becomes necessary to extract the tooth I should anticipate considerable hemorrhage.

Dr. E. A. Bogue:—I am reminded of a very efficacious way of controlling hemorrhage after extraction. Gutta percha is softened in hot water and pressed into the socket in the alveolus, having a surplus left on either side, and the patient is made to close the teeth upon it. The sides are then pressed together, it is taken out and cooled in cold water. In that way a plug is made which will almost always stop bleeding.

Dr. R. H. M. Dawbarn:—In surgery we are geting a good deal of satisfaction out of the use of glutol for this purpose. It is practically devoid of irritation and is antiseptic. It consists practically of gelatin that has been exposed to nascent formalin.

Some years ago a French surgeon discovered that gelatin was wonderfully effective in stopping hemorrhage. This same principle is applied here, with the addition that glutol is free from contaminating microbes.

The President:—I take great pleasure in introducing the essayist of the evening, Dr. Eugene H. Smith, of Boston, Dean of the Dental Department of Harvard University, who will address us upon the subject: "Extraction of Permanent Teeth: Its Bearing on the Hygiene of the Mouth and a Proper Procedure in the Treatment of some cases of Malocclusion."

(For Dr. Smith's paper, see page 3.)

The President:—The discussion of Dr. Smith's paper is now in order.

Dr. E. A. Bogue:—All surgery is a choice of evils; but a surgical operation is one thing, an orthopaedis, or orthodontic operation another. What was done in the early days for club foot, I do not know, but in these days no one would venture to advise an amputation to cure that deformity.

I do not understand Dr. Smith to be advocating the extraction of teeth, but I understand him to be showing us a number of cases in which the efforts of nature to repair a very serious loss have been seconded by himself, or some of his trained assistants, with the result that the ordinary damage caused by extraction has been reduced to its minimum.

I acknowledge readily that circumstances may occur in which the extraction of teeth or the amputation of any member may be necessary, but unless the results of extraction or amputation are to be less injurious than to leave the members in their position, first restoring them to health and a fair degree of comfort, it would seem to me that there is but one argument left in favor of extraction, and that is a pecuniary consideration. The results that follow the extraction of permanent teeth are:

1st: That it diminishes the size of the dental arches.

2d: It diminishes the size of the arch of the palate.

3d: It shortens the bite.

4th: It often causes separation of the upper incisor teeth.

5th: It causes exposure of the gums wherever the triturating ends of the teeth are not in contact.

6th: It prevents thorough mastication.

7th: It causes undue wearing down of the cusps of the teeth.

8th: It tends later on in life to fractures of the teeth at points of mal-occlusion.

9th: It gives greater liability to the deposit of tartar.

10th: It withdraws the normal support of the teeth, each against the other, which originally constituted the arch, resulting in a weakening of the powers of mastication.

11th: It causes undue crowding between the teeth that remain and touch at their grinding edges as surely as it gives space in the places left by extraction.

12th: It causes a rotation upon their own axes of the teeth which lean forward after extraction so that their contact with the adjoining teeth, if contact comes, is awkward, and is conducive to undue deposits—both of food and tartar.

13th: It diminishes the needed room for the tongue so that speech becomes less distinct than it would otherwise have been, and sometimes it leaves so little room that the patient complains of being cramped in tongue movement.

14th: Since the above results of extraction were presented to the National Association, in August, 1899, another and still more serious result has become apparent; namely, that if extraction is practised early in life in cases where the teeth seem to be very much crowded and a lack of room is the great necessity, extraction puts out of the question a normal growth of the bones

adjacent to the superior maxillae, and we have not only diminution of the dental arches, but a failure to develop of the palate bones, sphenoid, ethmoid, turbinated and nasal bones as well, and this involves a failure to develop of the lower portion of the skull adjoining the brain. It involves the failure to develop of the various meatuses, including those of the nose and the antra, so that the individual instead of being helped by this operation of minor surgery, made fitter to survive, is absolutely weakened and made less fit.

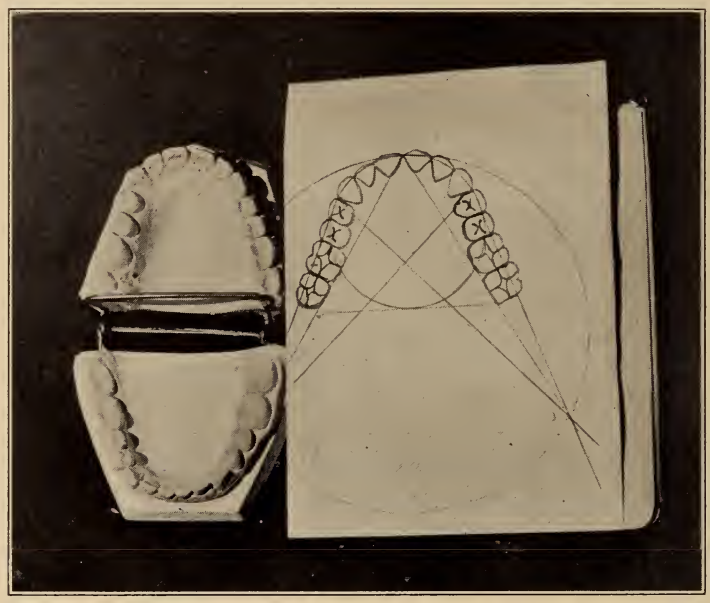


Fig. 1.

In making this remark, it will be understood that I recognize the fact that all cases of irregularity of the teeth are due to some weakness in the nerve centers, of which these irregularities are but a manifestation.

If, then, instead of aiding in the growth of undeveloped faces, mouths, and breathing apparatus, we still further weaken the individual by withdrawing the means by which such development might become possible, we should have exceedingly good grounds for our action before taking it.

Dr. Smith is at the head of an extensive clinic. He sees cases

there that he never sees in private practice; is called upon to resolve problems that never present themselves to the man in private practice.

Dr. Smith is careful to inculcate conservation, as well as conservatism to his students, but how he is going to impart his mature judgment to the young men that make up his classes, I don't see.

Neither do I see how one who knows the conditions that attend upon an irregular set of teeth in the young patient (I had almost said surround an irregular set of teeth), dare, by their advice, condemn those patients to a perpetuity of the evils that

Fig. 2.

accompany irregular teeth, even though those evils are not perceptible to the layman, nor even to the surgeon unless he investigates abnormal conditions in comparison with normal conditions.

If conditions of health, or pocketbook, or insurmountable obstinacy, or dense ignorance on the part of the patient cause the surgeon to declare it inexpedient to try to preserve diseased or crippled parts, that is a matter between him and his conscience, the latter having been enlightened by consultation, if needed, with other enlightened consciences.

And now, as Dr. Smith has chosen a few cases from his cabinets to show us the wonderfully good results under his care, I will show you a few that have not had so good care.

Fig. 1 is a case where the first permanent molars have all been removed; the teeth have closed up well, and the results are as good

as they can be in any case where teeth have been extracted, not one of Dr. Smith's cases is any better than this. The corrected chart by the side of the model shows what the arch ought to have been as regards size.

Fig. 2 shows Right and Left of same mouth. Masticating power is not good on left side, proximal cavities are appearing between most of the grinding teeth, the voice is lacking in sonor-

Fig. 3.

ous quality, and the teeth at 24 years of age show a degree of wear that ought not to be found in fairly regular teeth before 45.

Fig. 3 is another case where the principal molars have all been extracted. The appearance is excellent, and the structure of the teeth is good. The teeth show great wear at 38 years of age; the dentine even has become exposed and sensitive to mastication because of this wear, so that the patient complains that she can no longer chew on the right side; the left side has been cauterized and is fairly comfortable.

Fig. 4.

Fig. 5.

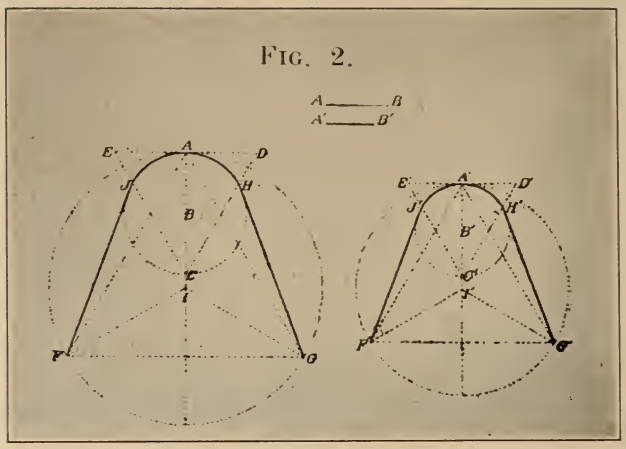


Fig. 6.

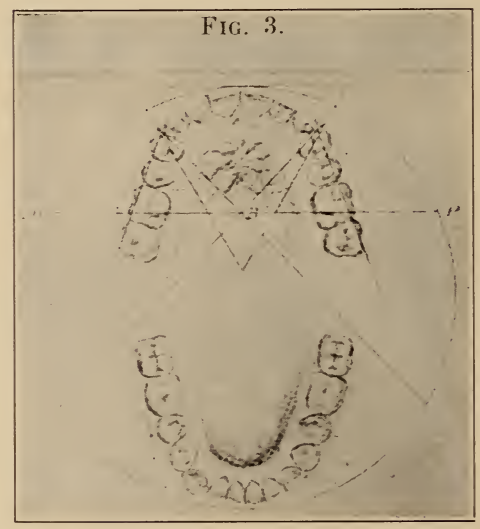


Fig. 7.

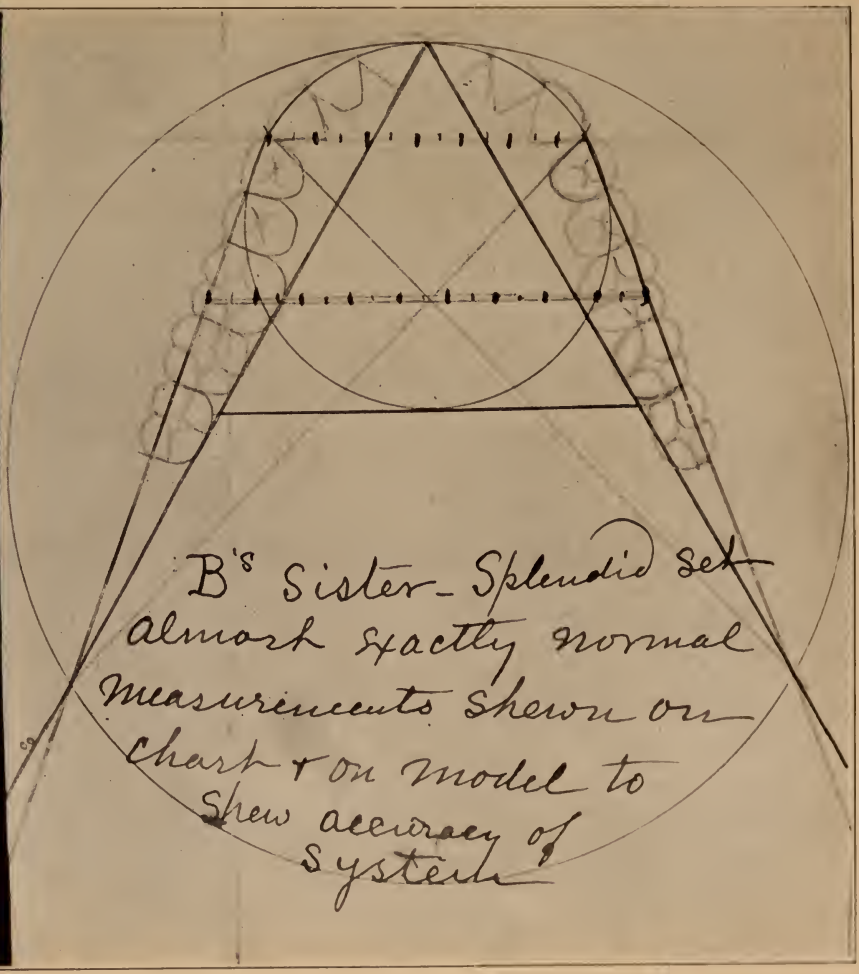

B's Sister - Splendid set
almost exactly normal
measurements shewn on
chart & on model to
shew accuracy of
system

Fig. 4 shows Right and Left of same mouth. On the Right side the upper molar articulates too far forward, so extraction did not regulate, although it did diminish the arch, and so interferes with distinct enunciation. The patient is frequently in need of dental services.

Fig. 5 shows two cases of a missing bicuspid. In one case it never erupted; in the other, it was extracted. The resulting deformity is practically the same in both, showing the forward pressure of the grinding teeth, and the bad results of losing even one tooth.

Figs. 6 and *7* show Dr. Hawley's adaptation of the Bonwill method of laying out the dental arches of man for the purposes of orthodontia, by giving the lines to which irregularly placed teeth ought to be drawn to make them regular.

Fig. 8 shows a chart drawn on this plan from the measurements of three upper front teeth, and beside it, a model of as perfect a set of teeth as could be found. The measurements of the chart have been transferred to the model for the sake of comparison, that it may be seen how accurately the measurements of the teeth themselves correspond to the dimensions of the arches in which they are designed to be placed.

Fig. 9 is a model of a case of orthodontia, said to have been completed to the satisfaction of the dentist, who is a professor of orthodontia in a dental college of high standing in the West. Retainer was worn two years, and had been discarded two years when the case was seen. This gentleman did not think a proper articulation of the principal molars necessary. This is the result.

Fig. 10. Side views of the same mouth. As there was no proper articulation of the teeth, there was nothing to prevent their returning to nearly their original condition of irregularity.

Figs. 11 and *12* show a case that came into my hands in 1891, when I knew nothing of the Ainsworth appliance, and not as much of the principles underlying orthodontia as is known now. Nevertheless, although I saw but little of the patient, owing to her being absent from the city much of the time, and to my being absent at other intervals, we had succeeded in spreading the arch so that her speech, which at the beginning was thick and muffled, became quite as clear as the majority of children. The degree of spreading is shown by the middle model dated 1894.

The child at this stage went West, and eventually went into the hands of the same gentleman who managed the preceding case.

He extracted two bicuspids, and drew the remaining teeth into positions of alignment, showing the best results that he could attain in this case from the conditions remaining after the extractions. He published a description of the case with cuts illustrating his work in 1899. In 1903 I again saw the young lady, and procured these last models.

It is plainly to be seen that the arch is contracted much below what it was in 1894, decay and tartar have wrought destruction, and now the conditions are but little, if any, better than in 1891 aside from the loss of four teeth and the masticating power of at least as many more.

If these are the results that follow extraction in the hands of skilled professors of orthodontia, who fail to attain correct articulation (which is only attainable in perfection when all the teeth are present), what are we to expect from the novice who is taught to extract?

Figs. 13 and *14* represent the varying conditions of the teeth in a mouth from 1883 to 1903.

In 1883 the principal molars were in fairly correct articulation while the grinding temporary teeth were still in the mouth. In 1884 the eruptive processes had caused the loss of several of the temporary teeth and the leaning forward of the lower molars. Shortly after this, by the advice of six or seven of the more prominent dentists of New York, the second bicuspid teeth were extracted. For some years subsequent to that, every effort that was known was made use of to bring the remaining teeth into correct articulation. The result in 1903 is shown as the best that could be procured. In this case the lack of development is evident, the face showing distinctly thinner than it ought to be, the features being sharp rather than round, and the spaces between the first bicuspids and the molars above never having closed up—the arch is much narrower than it should be; mastication has never been well performed, and never can be, as the articulation is nowhere correct. These are the results of a failure on our part at that time to grasp the principles that underlie the development and the arrangement of the dental arches and the adjacent parts.

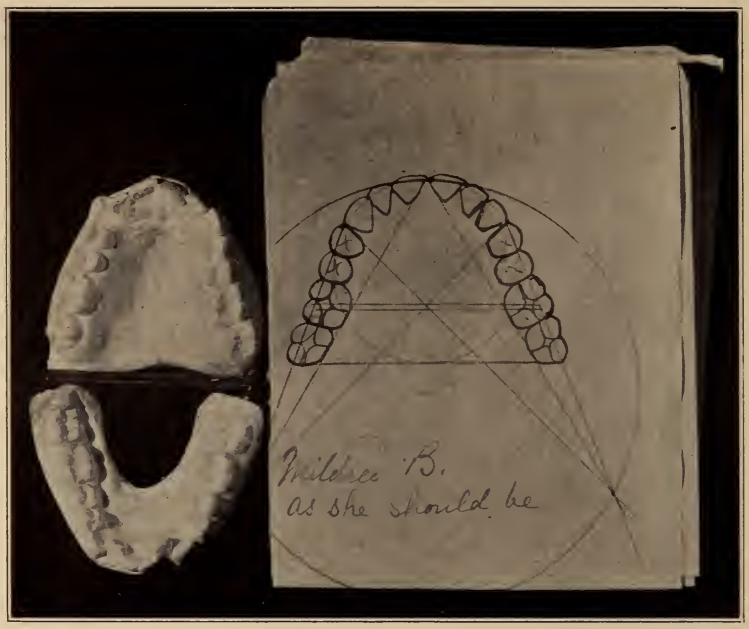


Fig. 9.

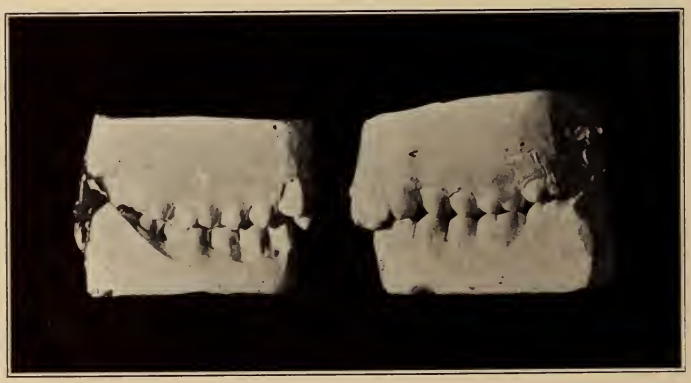


Fig. 11.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 14.

Fig. 15.

Fig. 15 represents a case of promiscuous extraction, and what it has done, of which I have, I suppose, hundreds of cases in my museum.

Dr. J. Morgan Howe:—In 1888 I read a paper before the New York Odontological Society, in which I tried to show that in treating malplaced teeth, the interests of the patients would be promoted by no invariable rule in regard to extraction. Those who care to refer to it will find it published in the *Dental Cosmos* of that year. I presented models and illustrations of the prior and subsequent condition of cases, showing my mistakes as well as what I regarded as my successes. Since that time, the advocates of the invariable rule of retaining all the teeth have been so active and voluminous, that sentiment seems to have gone with them, and timid dissenters have hardly had the courage to utter any protest against their edicts. Professor Smith's presentation of the subject heartens me to call attention to my old paper and to repeat some of its facts, for I still think they are worth considering.

The assumption of the idealists that dental arches will never be found too large, if expanded to hold all the teeth that develop in them, is, I feel sure, a mistaken one. I have seen a number of cases that convince me that the other features of the face are sometimes too small to present a harmonious appearance with such an expanded arch. I present the models of such a case that I regulated without extraction in 1899. I show you the condition before treatment, and also the models of the present condi-

tion from impressions taken last week. I stopped short of the expansion required to rotate the lower incisors, when I discovered how much fulness of the mouth was being produced, and the upper incisors have retrograded some since I did the work, but they present a fine, regular appearance to casual observation, and they are handsome teeth, but I made a mistake in not removing four bicuspids and moving the anterior teeth backward, for the young lady's mouth is too prominent for her face, and she would be much better looking if I had done so.

In that old paper, I also called attention to the fact that there are cases where the arches are too large; or rather, the teeth are too small, as they stand apart all around. I recently heard a gentleman discuss this subject with a contemptuous reference to a statement of teeth being too large for the arch, when he said in effect, "If such incongruity ever exists, why is it we never hear of teeth being too small for the arch?" He was too recent to have paid any attention to a paper seventeen years old, and had evidently not observed such cases, forgetting also that as there is nothing to be done but to save all there is of the teeth, they do not appeal for the same kind of consideration as do crowded arches.

From all my practice and observation since writing the paper quoted, I have been confirmed in the conviction that there are cases in which the orthodontist is justified in the extraction of teeth and where the judicious extraction of certain teeth will best serve the patient, irrespective of the question of expense, or the remuneration to the orthodontist, or if he be simply a dentist as I am. I want to say also that the question of remuneration, and the ability of the patient to pay for the devotion of much time, and the making of appliances, is proper to be considered; that the holding up of a standard of perfection is not always the proper way to look at the subject. Unfortunately, many of us have sometimes to work for people who have not an unlimited supply of money. I think Dr. Smith has successfully shown that most creditable results have been obtained by judicious extraction. Dr. Smith phrase, *"efficient occlusion,"* conveys an idea that should not be lost. I hope this idea of "efficient occlusion" will make an impression on the minds of some of those that are being carried along in the rushing current created by the propagandists of idealism or nothing.

THE PRESIDENT:—We are fortunate in having with us to-night Drs. Bryant, Wood and Lewis. We should be very glad to hear from them upon this subject.

DR. R. LEWIS:—I have had great pleasure in listening to this discussion to-night. I did not know until to-night that the question of the correction of irregularities of the teeth was of such great importance. Of course, my point of view of the subject would naturally be in connection with the correction of narrowed nasal and naso-pharyngeal spaces. The question of the removal of enlarged pharyngeal and faucial tonsils and of nasal lesions to correct mouth-breathing and so prevent the development of the narrow buccal arch, was only lightly touched upon. It would seem to me that this is a very important subject to consider in this connection.

DR. W. B. WOOD:—I wish to express my gratitude to the society and to Dr. Smith for the opportunity of listening to this paper and the discussion thereon. It is a subject that I have been interested in for a great many years. There are more than two sides to it. There are a great many sides. We cannot go into the question of heredity because we do not know what heredity is. We see a great many children who, from the first, or at least, as soon as we are able to make any observations, have small faces. There is retarded development of the naso-pharynx, and in such children we see growths which seem to be an expression of deficient development. But they seem to be a result, not a cause. The enlarged tonsils are the result of an extra effort on the part of the tonsils to gather up and dispose of the germs present and when they become enlarged they become foreign bodies. Later on at about six years of age when the first molars begin to erupt, developmental problems begin to attract attention. We have at that time two conditions which run into each other. At that time I believe the whole of the future dental problems can be dealt with, and a true line of scientific preventive treatment mapped out.

DR. W. S. BRYANT:—I have not the temerity to take issue with my foster brother, Dr. Smith, and am not enough of a stomatologist to have any opinion whatever as to whether teeth ought to be removed or not. The impression made on me by my clinical rhinological work is that overdeveloped superior arches are very rare. As a rule, they are underdeveloped. Anything

that will be an aid to development should not be disturbed, and for that reason, it would seem that the more teeth one saves the better results one should get. All the bones of the face and cranium participate in the development of the superior maxillae. There is consequent improvement in the respiration, the voice, the character, the mental calibre and beauty of contour when these bones attain normal growth.

Dr. J. N. Farrar:—I have been much interested in the paper and discussion. Professor Smith's question seems to be, "Is the extraction of a permanent tooth ever indicated?" I believe as do Drs. Smith and Howe that in certain cases extraction is indicated. I do not advocate extraction in the majority of cases, but there are some in which extraction is not only allowable, but necessary. Many decayed teeth can be saved if the roots and sockets are not too badly involved, but frequently the teeth are rotten from crown to apex, and if associated with an abscess, I do not believe can be permanently cured. In such cases, I would do away with these poisonous conditions and close the space made thereby in the best manner circumstances permit.

Sometimes the central incisors are "one-sided" and are not true to the medium line. This fault may be corrected by taking advantage of the space gained by the extraction. I have recently corrected such a case by the extraction of an unsavable upper first molar, and there was no leaning of any tooth.

Dr. J. Lowe Young:—While the essayist has made assertions that he feels are correct, there is room for a great difference of opinion in looking at his slides. In most all of them he speaks about no tipping in cases where there have been extractions. I think I am able to observe in all of these cases a tipping both antero-posteriorly and lingually. He also spoke of the facial lines being good, almost perfect, but he has not shown us the pictures of these cases. This mere statement I do not think would be indisputable evidence. I do not think the pictures of of these different cases before and after the correction. This would be indisputable evidence. I do not think the pictures of these cases would bear out all that the doctor has said about the great improvement. It is impossible to get a perfect occlusion where teeth have been extracted. I do not mean to say that it is never necessary to extract teeth, but I will say that it is never necessary to extract teeth to make room. And in the case of a

child twelve or fifteen years of age where an extraction is made, the development of the whole face and the nasal passages is arrested and rendered incomplete.

Fig. 1. Models of a man who had four teeth extracted and the spaces allowed to close up. There is great wear of the teeth, the bite is much shortened, the tritulating power is diminished and there is marked pyorrhoea around the lower incisors. This man suffers a great deal from dyspepsia.

Fig. 2 shows both sides of articulated models where the first lower molar on the right side was extracted and second molar allowed to drift forward. Note occlusion on left side.

Fig. 3 is the occlusal view of lower model of *Fig. 2* with a diagram after Dr. C. A. Hawley's method, showing that in this forward movement of the second molar that it has drifted lingually three-sixteenth's of an inch. These models also show a distal drifting of the incisors and cuspids, and a marked narrowing of the right lateral half of both upper and lower arches, all due, we believe, to the loss of the first lower molar.

Dr. Stanton:—The "new school" has been referred to. I presume by that was meant the Angle school. The evidence that we have here to-night is in such bad form that it is hard to analyze it. In the first place, Dr. Smith says that the photographs do not show spaces between the molars after correction, but the photographs do seem to show such spaces. He says that in these cases not only is the occlusion corrected, but the facial lines are bettered, but he has shown no evidence in the way of pictures to prove his case. Could it not be possible for two cases very similar in character, to be corrected by the different methods and the results brought before the society with appropriate and convincing casts and photographs?

Dr. H. L. Wheeler:—I was very glad to have an opportunity to listen to Dr. Smith's paper and happy to realize that we have another man in our profession who is not following a fad. It is a real pleasure to listen to a man who shows that he is following his own judgment and is not tied to somebody else's ideas. It seems to me that the so-called new school are very persistent with their idea, that extraction should never be indulged in. As I have listened to Drs. Howe, Smith and Farrar, I have not heard them say that there are no cases where extraction should not be made, but that in the majority of cases, there is no need for it.

Fig. 1.

Fig. 2.

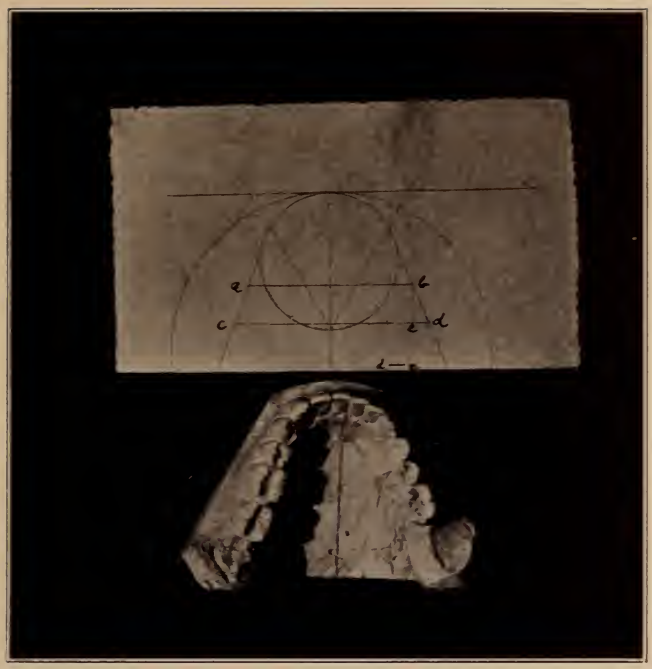


Fig. 3.

Dr. Bogue brought up the question of the club foot. Now the club foot is a deformity, a defective and abnormal organ. Mal-occlusion of the human teeth rarely is a deformity in that sense of the word, but is merely a faulty arrangement of perfectly well formed organs. Dr. Bogue also called attention to the undue wearing of the cups. I can state that from an examination of a very large number of aboriginal skulls, almost without exception I find the teeth worn off evenly, and many times through to the dentine. I do not agree with Dr. Bogue on this point.

Dr. Eugene Smith:—Dr. Young made a very telling criticism when he charged that I should have presented photographs showing the facial relations. It is a difficult matter to get the consent of patients to have their pictures carried about the country and thrown upon screens. However, as Dr. Young lays so much stress upon pictures, why did he not show us a few? He

has also made statements and showed us models—but no pictures.

We are all apt to make unsupportable assertions in a discussion. Dr. E. A. Bogue made many, and Dr. Young said that pyorrhoea might be traced to cases where extractions had been made for regulating purposes. Very good; I can show him cases where pyorrhoea has developed in a mouth with a perfect occlusion where no regulating had been done. In fact, it is claimed by not a few that a prolific cause of pyorrhoea is the ligatures used during the process of regulating. I myself do not believe that we can attribute pyorrhoea to the regulating of the teeth.

Of course, I am quite willing to admit that in many cases there is an improvement in the development of the face by widening the jaw and retaining all the teeth, but these are cases where any one who knows his job would not extract. These are usually cases with a very high arch, and in such cases, I make every effort to save all the teeth, even those that are badly broken down. But, again, we have cases where there is great mal-occlusion and where the arch is broad and flat. In such cases little or no room can be gained by widening the arch, while the facial lines, the occlusion and the whole aspect will be greatly improved by a judicious extraction of certain teeth. I feel secure in this statement, for an experience of twenty-five years in this method enables me, I think, to speak with greater certainty than those of the so-called modern school whose oldest cases cover but a very few years.

Upon motion, a hearty vote of thanks was extended to Dr. Smith for the excellent matter brought before the Institute.

Adjourned.

FRED L. BOGUE, M. D., D. D. S.,
Editor The New York Institute of Stomatology.

The New York Institute of Stomatology.

A meeting of the institute was held at the Chelsea, No. 222 West Twenty-third street, New York, Tuesday evening, February 6, 1906, the president, Dr. S. E. Davenport, in the chair.

The minutes of the last meeting were read and approved.

THE PRESIDENT:—Gentlemen, this society has recently sustained a great loss in the death of its vice-president, Dr. Charles F. Allan, who died at Newburgh, Thursday, January 4th. Dr. Allan was one of the twenty-three charter members of the Institute, and was always one of its most loyal friends and advocates. For five years he served on the Executive Committee, being its chairman one year, and at the annual meeting last December he was chosen vice-president. At a business meeting of the active members held recently a committee of two was appointed, Dr. C. O. Kimball and Dr. E. A. Bogue, to prepare a minute to be read at this meeting. We will hear from the chairman of that committee, Dr. C. O. Kimball.

At a meeting of the New York Institute of Stomatology, held February 6, 1906, the following resolutions upon the death of our fellow-member, Dr. Charles F. Allan, were adopted:

WHEREAS, Our beloved friend, fellow-member and vice-president, Dr. Charles F. Allan, has been removed from us by death. Be it

Resolved, That the New York Institute of Stomatology deeply deplores the loss of an efficient member, an upright and cultivated gentleman, and an honored officer; and that the sincere sympathy of the members of this society be conveyed to the family of Dr. Allan, with whom they mourn.

Hugh Black, in his charming book on "Friendship," says of "The Eclipse of Friendship," "As it is one of the greatest joys of life when a kindred soul is for the first time recognized and claimed, so it is one of the bitterest moments of life when the first rupture is made of the ties which bind us to other lives."

And when to each of us comes the time of breavement and we

stand aghast at the sense of loss which we feel, it is well for us to let our minds dwell upon the character of the one whom we have lost. We may see through the less abiding things that remain. A friend has passed away, and we mourn for "the touch of a vanished hand, and the sound of a voice that is still."

But the friendship has brought into our lives something of help and uplift that remains, and our life is made richer by the treasure.

Charles Frederick Allan was born November 2d, 1844, in Cleveland, Ohio, where his boyhood and youth was passed.

He studied in the grammar school and in the Central High School, from which he graduated. In 1862, he entered the Union Army, fought with the Army of the Tennessee during the whole of the campaign that culminated at Vicksburg, July 4th, 1863. Broken down by sickness, he was assigned to special duty at St. Louis. Meanwhile, his older brother, George, after graduating at Kenyon College in 1859, and studying dentistry at the Ohio Dental College, graduating in 1861, had come East and settled at Newburgh, N. Y. To him Charles came in 1865, studied with him, and in the Pennsylvania Dental College, took his examination before the New York State Board, and received the degree of M. D. S.

Returning to Newburgh, he was associated with his brother, but soon upon the removal of his brother to New York, he succeeded to the whole practice, in which he remained until his death.

He was married in April, 1881, to Miss Mary Crawford McCamly, who, with one daughter, survives him, and from the time of his marriage forward his hearth was truly his "Golden Milestone," the center of his life.

He was a member of the City Club of this city, and of the Odontological Society of New York, of the Second District Dental Society, chairman of the Section of Stomatology of the American Medical Association, and Vice-President of The New York Institute of Stomatology.

Such is the brief story of the life we knew and loved so well.

Let us for a few moments allow our minds to dwell upon the character of this wise and kindly man, and as we turn it now this way and now that, we shall see the light flashing from its many facets, revealing beauty at each turn. We shall see the steady light of faithfulness; faithful to the call of his country for help; faithful to his patients, ever looking out for the best methods, that

he might give the best of service. During his last visit to Europe, for instance, making a special study of porcelain inlay under Dr. Jenkins, of Dresden. Faithful in study and preparation, faithful in the broader aspects of his professional life, he early recognized the duty that he owed to his brethren.

He was a charter member of this Institute, and was for five years on its Executive Committee, and though modestly disclaiming any merit, and in spite of the drawbacks of his distance from the city, he was always a force in its councils, full of wise suggestions, careful and methodical in carrying them out.

As we turn the jewel further, we shall catch the flash of a sound judgment, which made his opinions valuable, and gave him a correct estimate of men, among whom his friends were chosen men—always the best.

Then we shall be thrilled by the warm, ruddy glow of love and kindness that ever shone from his face, because enshrined in his heart. And we shall rejoice in the sparkling light of humor which was always present.

Still another turn, and the crowning glory is revealed. The clear, heavenly light of honor and honesty, down to the smallest detail of daily life. This was his ideal, and well he lived up to it.

May the memory of his virtues, the charm of his personality, quicken in us the growth of similar traits. So shall his life go on through ours, and the world be richer.

Charles O. Kimball,
E. A. Bogue.

These were unanimously adopted, and the secretary ordered to send copies as suggested.

Communications on Theory and Practice.

Dr. L. M. Cowardin, of Richmond, Va., presented the casts of a case of cleft palate upon which he was anxious to receive some suggestions as to the best methods of procedure. An operation for the closure of the soft palate had already been performed, but the cleft still existed in the hard palate. The boy was about fourteen years of age. The teeth in the premaxillar portion existed in an unerupted and matted condition.

Dr. Jackson:—In the first place, if there are impacted teeth, I would suggest that everything possible be done to cause them to erupt. Certainly, if the case can be improved by further operation, it should be done as soon as possible. The hard palate and the cleft could be covered with a plate, at the same time filling with artificial teeth any spaces in the arch. Of course, it is difficult to prescribe a line of treatment without seeing the patient. One of the first things to be taken into consideration would be the facial line. I notice in these cases that the bite is usually too short, so that if a bridge were used without lengthening the bicuspids and molars, the desired result would not be obtained. But with a plate these teeth could be covered, lengthening the bite, at the same time covering the cleft, causing a good surface for the application of the tongue in pronunciation. When the bite is to be opened very much, porcelain teeth, or white rubber teeth, can be used on the plate.

The President:—I now take great pleasure in introducing our honored member, Dr. Louis Jack, of Philadelphia, who will read a paper entitled: "The Conservative Treatment of the Dental Pulp." (For Dr. Jackson's paper, see page 36.)

Dr. H. W. Gillett:—I have considered Dr. Jack as one of my teachers for so many years that it seems to me almost presumption on my part to even discuss his paper, and certainly presumptuous for me to criticise it. No one desiring to attempt conservatur treatment of the dental pulp can afford to neglect this clear enunciation and careful tabulation of principles. In some respects my own practice differs from that outlined by the essayist, and I shall content myself by asking Dr. Jack some questions, with the hope that he will make clearer certain points. First I wish to enter a disclaimer. In anything I shall say I do not wish it to be understood as meaning that I consider the pulp of no value after the subject reaches majority. I should like to hear Dr. Jack's views on this point, as to whether, in his opinion, the pulp of the human tooth becomes of relatively less importance as the person advances in age, and whether or not there comes a time when the pulp is valueless or at least of negligible value.

It would seem to me that Dr. Jack's success in the treatment of these cases has been rather exceptional. This may be due to the fact that Dr. Jack's pre-eminence as a practitioner enables him to command an obedience from his clientele that is not com-

mon. That, and the systematic and careful handling of his cases is presumably largely responsible for his results. It was my good fortune, several years ago, to have Dr. Jack demonstrate to me the technique of his thermal tests and his use of the chloroform and aconite mixture. Since that time I have had occasion to use it repeatedly with much satisfaction. Certainly, in many of the cases where I have made this application, I have seen a distinct gain toward the normal. It is perhaps to be borne in mind that in many of these cases the tendency would be in that direction in any event. One of the benefits of the application is the readiness with which the typical fussy patient discovers that the irritation she has complained of does not need treatment. The application is decidedly irritating.

As I understand Dr. Jack, he ascribes the chief benefit of this mixture to the aconite, and he uses the chloroform merely to facilitate the absorption of the aconite. I had supposed that the chloroform was important as a counter irritant. If it is not, and the aconite is the principal factor, I have been wondering why it would not be simpler and better to prescribe the aconite internally. Aconite is a cardiac, arterial and nerve depressent, and is very rapidly eliminated, consequently administered in small and frequent doses. It would seem to me that if Dr. Jack finds the action of the aconite to last for as long as two days, he must be noting some effect not mentioned in the text book.

Two points Dr. Jack emphasizes are the strength and the color of a pulpless tooth, as compared with a live one. I do not wish to start a profitless discussion upon the old question of the relative value of arsenic and cocaine in the removal of the pulp, but Dr. Jack has introduced the subject in such a way that in order to make myself clearly understood I must mention the subject. I want to call your attention to Dr. Jack's article in the last edition of the *American Text Book,* page 406. There he says: "The methods above defined have the advantage over the previous general practice of devitalizing with arsenious acid, as being more promptly effected, with much less pain in congested cases, and with the added advantage of avoiding any danger of causing discoloration." This is so good a statement of my own experience in the use of cocaine in the removal of the pulps of teeth, dating back to 1890, when Dr. E. C. Briggs, of Boston, first published his paper upon the process later named "*pressure anaesthe-*

sia," that I am surprised to find Dr. Jack still advocating the use of arsenic for the devitalization of teeth. I am anxious to have his reason for this. I do not think of using arsenic for this purpose, indeed, I would put it still stronger: I should feel that if I used arsenic in any of the eight or ten front teeth for the removal of the pulp, I was failing to do my duty to my patient, and I prefer cocaine in all cases. The arguments in its favor are my own convenience, the comfort of the patient, and the more satisfactory results as regards the health, strength, and appearance of the tooth during the years to come. The discoloration is certainly less in the teeth where cocaine has been used. I quote three paragraphs from Dr. Black's article on the "Physical Characters of the Human Teeth," in the *Dental Cosmos* for 1895:

"I have made diligent search to find whether or not teeth from which the pulp has been removed, and the canals and pulp chambers filled without admitting the fluids of the mouth, were subject to a similar deterioration of strength. It is now well known that teeth treated in this way retain their color almost perfectly, and from my own observation of the relation of color to the strength of the teeth, I am prepared to entertain the supposition that they retain their strength also." P. 413.

"Those muddy in color, especially if markedly discolored, showed constantly an additional percentage of water, and the few I had the opportunity to test, the crushing stress broke below 200 pounds, showing a marked loss of strength." P. 413.

"Teeth that have lost their pulps and have become discolored, lose their strength in a marked degree, apparently from a deterioration of the organic matrix." P. 415.

One of the points frequently overlooked in comparing pulpless with normal teeth, as regards strength is that a tooth with a cavity in it large enough and deep enough to expose the pulp is necessarily much weakened, and it is not fair to compare the strength of such teeth with that of perfectly sound teeth. The question as to whether a discolored tooth is weaker than one that is of a normal color is one that can not be settled by clinical evidence.

I saw recently some so-called "cellulaine" caps apparently made of celluloid for the same purpose that the little metallic caps described by Dr. Jack are used. They seemed helpful adjuncts to such work.

Undoubtedly, with the careful analysis of conditions that Dr. Jack makes and the careful treatment that he pursues thereafter, with the personal equasion so satisfactorily accounted for, many pulps may be saved that most of us would destroy. I have, perhaps, erred on the radical side, but I must confess that I have less fear of discoloration, of loss of strength, and of suffering for my patients at times when dental services are not procurable, if these doubtful pulps are surgically removed at a period in their history when there is no likelihood of or reason for septic contamination.

Dr. Geo. S. Allan :—I am delighted that such a paper as this has been presented to this society just at this time. The papers and discussions of the present hour seem to be along entirely different lines. Most of them seem to deal with destructive dentistry. We have extension for prevention and other destructive methods advocated in a very decided manner. As also the killing of the pulps of living, sound teeth in order to prepare them for caps or anchorages for bridges, etc. Dr. Gillett has quoted Dr. Black's opinion as to the difference between dead and living dentine. If my memory serves me correctly, Dr. Black is on record as advocating the removal, in excavating for a filling, of every particle of discolored, affected dentine, and if this cannot be done without exposing the pulp, why, expose, kill and remove it. Now, this to me is an abhorrent idea. Dr. Black seems to have very little respect for the living pulp. I do not believe in any system that advocates destruction where conservative methods can be used instead. There are a great many teeth that have been lost through peridental inflammation and suppuration that might have been saved if conservative instead of destructive dentistry had been more to the front. I would like to have Dr. Jack enlarge a little upon the relation of the age of the individual as affecting the life of the pulp. Of course, at an advanced age the dental pulp is practically destroyed. In such a case, would he adhere to conservative methods, or let up a little in his practice? Again there are many cases where distructive dentistry is, in reality, conservative destistry. I allude especially to those where infection of the pulp is either actual or imminent and where the line of best practice is in doubt. I would like much to know on which side of the line would Dr. Jack be found? Would he

give saving the pulp alive the benefit of the doubt, or proceed to destroy it?

It is certainly a pleasure to listen to a man with the courage of his convictions, and one who was daring enough to present to us so courageous a paper in support of them. I wish to extend to Dr. Jack my sincere thanks.

Referring briefly to Dr. Gillett's method of destroying the exposed or nearly exposed pulp, I would say that I practice with the one he advocates, *viz:* by the use of cocaine, as well as the older one by the use of arsenical paste. I have no trouble with the latter, and do not anticipate pain or inflammation of any kind, and, therefore, think Dr. Jack's method in many cases to be the most advantageous.

Dr. J. Morgan Howe:—I am very much pleased with Dr. Jack's presentation of this subject. I have followed in a crude way—compared with Dr. Jack's—the practice of the conservative treatment of the pulps of teeth, for many years. But his method of systematizing comparative diagnoses and prognoses, as well as his method of treatment is, I am sure, an advance on anything I have known. I have been, however, acquainted with the value of aconite and chloroform, and have used it in a way similar to that which he suggests, with great benefit in many cases. I shall be glad if he will tell us in just what way he gauges the temperature of his warm and cold water.

I would like to say, also, that I have found the paste of eugenol and oxide of zinc—introduced by Dr. Lucky—not only valuable for the purpose mentioned by Dr. Jack, but also useful as a temporary stopping that will last well when not subjected to the direct stress of mastication. There is no need of keeping it dry on introduction. I wish to thank Dr. Jack for his paper, which must be of value to us all.

Dr. Babcock:—Such a presentation as has been given us tonight by Dr. Jack has been very much needed, and I have listened to it with great pleasure. I should like to hear a little further from him regarding the effect of age on the individual. I think with the deciduous teeth this method would not prove very successful. I should say that in middle-life the chances of success would be about even, while it would diminish with advancing age.

I have not used the little metal caps mentioned by Dr. Jack. except in the treatment of devitalized deciduous teeth, as taught

by the late Dr. Frank Abbott, of New York. I have used a capping of oxide of zinc combined with creosote, applying it on a piece of paper to the point of exposure. Where there was no actual exposure, but danger from thermal shock, I have found that to first paint the spot with Fletcher's carbolized resin and, as soon as that has dried, to apply his copal ether varnish, has given excellent results in such cases.

Referring to heat tests, my experience has been that where a tooth responds to heat it is due to the fact that gases have already formed within the tooth and the application of heat expands them, thus causing the response.

Dr. Jack speaks of applying eugenol to a pulp to reduce the inflammation before applying arsenic to devitalize it. I would ask, why not apply cocaine instead and open into the pulp chamber and then apply the arsenic? I doubt very much if it makes any difference whatever, with regard to discoloration, how you devitalize a tooth. The most important thing is to devitalize quickly and remove the contents of the pulp chamber and nerve canals promptly, in order to prevent discoloration through the decomposition of the organic portions of the pulp. After the removal of the pulp, wash out the canals first with chloroform to remove all fatty matter, then use alcohol to dehydrate the parts, following with peroxide of hydrogen to oxidize any minute particles of organic matter that might have been left. Follow this by proper filling and the results will be very satisfactory.

Why does Dr. Jack use eugenol and oil of cloves together? As I understand it, eugenol is concentrated oil of cloves. Speaking about aconite and chloroform, aconite undoubtedly acts upon the parts locally. Why not use the old formula of aconite and iodine?

Dr. W. D. Tracy:—It has been my pleasure several times to see patients who have been under the care of Dr. Jack. In two or three cases I have found just what he has told us about, namely, the deposits of secondary dentine over the pulps that have been capped. I have tried at times to follow the methods outlined by Dr. Jack in my own practice; but I fear many times the methods of "destructive dentistry" just referred to have had the upper hand, and I am inclined to devitalize more frequently than to attempt to cap and save the pulp alive. After a pulp is thoroughly removed and the roots have been carefully filled. I

am pretty sure the tooth will remain quiet. However, for those of us who have this radical tendency, such teachings as those of the essayist are always helpful.

Dr. Jack:—There is very little more for me to state. In qualification of what I have written respecting the value of the pulp to the teeth, I am aware it becomes less important to preserve it as a person advances in life, therefore, then, the capping of the pulp is less necessary.

In respect of aconite, the results presented are the outgrowth of long experience. I should be at great loss to treat cases without the combination given. Counter irritation does not appease unless the application is continued for a longer time than 20 seconds. I have from repeated use of aconite, as described, observed apparent effects so marked that the only conclusion admissable is that the remedy acts by diffusion into the adjacent tissues.

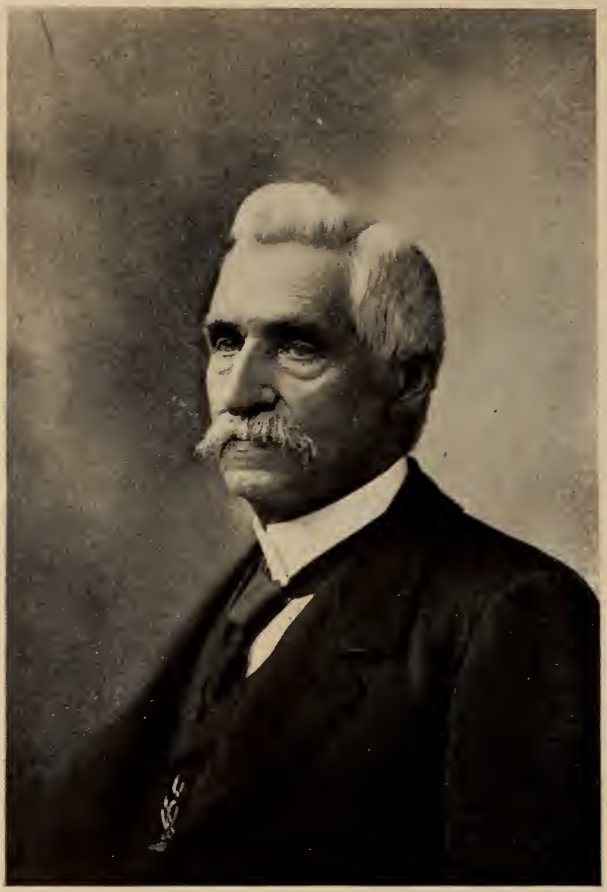
Respecting the use of arsenic, I have to state that I rarely use it, and the allusion to it was as to the too general practice of depending upon it. However, cases occur when cocaine, by any of the methods of enforcing it, is not effective.

Concerning eugenol, the synonyms of which are eugenic acid and caryophllic acid, in comparison with oil of cloves, it has been proven that the former has very slight germicidal power, whilst the latter is effective in the proportion of 1 to 1,130 parts. Therefore, when it is desired to produce antiseptic action, the two should be combined. In this connection oil of cloves does not inhibit cementation.

Upon motion, a vote of thanks was extended to Dr. Jack for his valuable paper.

Adjourned.

Fred L. Bogue, M. D., D. D. S.,
Editor of The New York Institute of Stomatology.



J. M. Davenport.

THE JOURNAL

OF

THE NEW YORK INSTITUTE OF STOMATOLOGY
AMERICAN ACADEMY OF DENTAL SCIENCE
HARVARD ODONTOLOGICAL SOCIETY

AND THE

METROPOLITAN DISTRICT
(MASSACHUSETTS STATE SOCIETY)

Vol. I | JULY, 1906 | No. 2

OUR CREED.

"Trade is occupation for livelihood;
Profession is occupation for service of the world.
Trade is occupation for joy of the result;
Profession is occupation for joy in the process.
Trade is occupation where anybody may enter;
Profession is occupation where only those who are prepared may enter.
Trade is occupation taken up temporarily until something better offers;
Profession is occupation with which one is identified for life.
Trade makes one the rival of any other trader;
Profession makes one the coöperator with all his colleagues.
Trade knows only the ethics of success;
Profession is bound by lasting ties of sacred honor."

Pres. Faunce of Brown Univ., before R. I. Med. Soc.

This wise and thoughtful statement of President Faunce goes so deeply into the root of the matter that we place it here as a motto up to which we are trying to live.

We believe that dentistry is really a profession, not a trade;

and we find this belief borne out by a careful examination of this statement. But it is never wise in beginning a new work to ignore good work that has already been done in a similar direction. Hence, we have no quarrel with the various journals which are controlled by and represent various trade interests; they are honest and true to their purpose. They have great excellence in their own direction and are wisely calculated to aid not only their supporting trade, but also those persons upon whose trading they depend. In furtherance of this end they spend money freely, employing the ablest men they can find who will accept their service, and make costly use of all the arts of printing and illustration. This is honest, straightforward and true, and the men who serve them faithfully are worthy of honor. The excellencies of these journals are so well and so fully appreciated that it is not necessary to dwell further upon them. But if it is true that dentistry is a profession and not a mere trade, then it is surely time that the profession as a whole should be bound together by one or more publications which should represent and be controlled by the profession itself and not by a trade which lives upon it. If the profession is really an oak, it should bear its own fruit and not allow a parasite, drawing its life from the tree, to put forth its fruit as the fruit of the tree. The oak should bear acorns which have the seed of life in them, and not merely mistletoe berries, which, however beautiful, can never grow oaks. And why do we want acorns? Because we want oaks. For the profession needs its own publication, not only as its proper fruit, to show to the world that it really lives, but also as the seed from which may spring a new and vigorous growth.

At bottom the profession is a thought—a thought of service of the world, and such a thought needs expression not only in service, but in words which may quicken to life in other minds the desire to serve. Who may speak such words for a true profession? Can those whose real purpose is not to serve but to sell, who, in spite of all excellence, are frankly and openly traders?

We believe that we are a true profession; that our fundamental thought is really and truly a desire to serve our fellows. And we are founding this journal that not only we ourselves may better serve our fellows, but that we may help to deepen in the minds of others the thought of service of the world. We seek also the binding force of a common purpose, that controlling the expression of our own thought we may see to it that the thought of service is not hidden by the thought of gain, for the natural selfishness of man needs every help if it is to be changed to unselfishness.

The vision that comes before us is that of all members of the dental profession bound together in a great band, even as their brothers of the medical profession are bound. Each seeking to perfect himself in his ability to serve and to aid in the perfecting of every one else. Each one striving that the thought of service may have the final triumph.

That as we have freely received so we may freely give.

CHARLES O. KIMBALL.

THE RISE AND FALL OF NATIONAL DENTAL ORGANIZATIONS.*

BY JAMES TRUMAN, D. D. S., PHILADELPHIA.

GENTLEMEN:—The history of dental organizations in this country is replete with valuable lessons worthy of careful consideration by every one interested in the progress of dentistry. It is, therefore, with no apology that the writer appears before you this evening, at the request of your Secretary, to attempt to analyze that knowledge and endeavor to deduce therefrom some ideas as to the possible future of organizations yet to be developed.

The chaotic condition of national organized effort in this land has brought a feeling of unrest throughout the dental mind and in some it has reached the point of rebellion against the present methods adopted by the National Dental Association. This feel-

*Read before The New York Institute of Stomatology, March 6, 1906.

ing is a repetition of history and is almost certain to occur in mixed legislative bodies and was prominent in the dental profession at the period of the earliest effort at organization and was the cause of the dissolution of the American Society of Dental Surgeons in 1856.

It is very evident that the destructive agency that has undermined the several national organizations has been the methods adopted in admitting to membership. All of the four societies, organized as national bodies, have suffered from this cause, and two of them have succumbed to its influence—The American Society of Dental Surgeons, and the American Dental Convention.

In order that this may be understood, attention is called to that part of the Constitution of The American Society of Dental Surgeons relating to the admission of members. In Article IV it states: "There shall be two classes of members, known and recognized as Acting Members, or Fellows and Honorary Members, the former consisting of those who subscribe to this Constitution either personally or by proxy, and pay into the treasury the annual dues required by this Constitution, and the latter embracing such members as are merely elected to membership."

This rule would seem, upon superficial examination, to have met all requirements, and yet, when examined critically, it carried with it the elements of disturbance. No provision was made to gauge the character of applicants, all being admitted who could pay the necessary annual dues and provided the applicant could have sufficient influence to induce two-thirds to vote in his favor. At the period of the organization of this Association (1840) a procedure such as this invited the entrance of a large body of men claiming to be dentists, who possessed neither the requisite qualifications nor the standing professionally or socially to make their entrance valuable to a scientific body such as this was expected to be. This freedom of entrance was not in accordance with the view of Horace H. Hayden, the founder, who stated at the time, "That the Society was founded upon principles which he did not approve and that there had not been sufficient circumspection in its organization." One writer, in discussing the downfall of this Society, clearly pointed to the fact that this was "due to the laxity of its rules in regard to qualifications for and admittance to membership." It was held that to insure the permanency and success of a society, great care should be taken

to admit into it only such members as could be relied upon to carry out its objects to the full, that "the more fixed and peremptory in its restrictions, the more exacting in its requisitions as to the attainments and qualifications of its members, the greater would be its influence and the higher could its aims and requirements be kept without danger to its existence."*

The effect of this laxity in admission to membership, is written upon the pages devoted to the proceedings of the Association. Instead of becoming a body devoted to the advancement of the dental profession, it became an organization, in the language of one familiar with it, more interested in "its own internecine warfare, thus preventing the agitation of subjects of much more real moment to the profession." The end came in New York, August 1856, when, after great difficulty in securing a quorum, the Association was adjourned *sine die*.

Extended analysis of the cause of this dissolution, after a disturbed life of sixteen years, would seem hardly necessary. It is apparent that the Association was founded on a too prevalent desire then, and now, to make numbers the test of strength. It increased its membership at the expense of quality, with the result, that discordant elements secured the ascendency and the rule or ruin policy became the motive force and finally ended, as all such motives to action will, in the destruction of the organization.

The defects apparent in the Constitution of The American Society of Dental Surgeons, led many prominent in dentistry to conceive the strange idea that all that was needed to meet the difficulties experienced by the first organization, was to establish one in which entire freedom should exist and membership should be secured without the difficulty heretofore experienced. In August, 1855, "The American Dental Convention" was organized. The original code of laws provided "that a majority should elect members, but such was the great fear of red tape in the conduct of societies, that at the second session, held in New York, 1856, the membership articles of the Constitution were suspended and at the subsequent meeting the whole of that instrument was abrogated and the Convention became an open one."†

The foregoing action of this body predetermined its life. It

* History of American Dentistry.

† Ibed.

had some years of vitality, but those present who took part in its proceedings are well aware that the entire tendency was towards a garrulous expenditure of words with the science of dentistry reduced to a minimum. The freedom of admission meant freedom of utterance and a free platform eventually drove the better elements from participation in its proceedings. The Convention lived long in weakness and eventually died from sheer inability to longer continue an almose useless life.

The defects of this organization were so apparent that the better class in dentistry were constrained to make another effort to form a National Association, without the faults of those previously mentioned. This effort was met with decided opposition from those who still adhered to the freedom of the American Dental Convention. The poison which this body had instilled into the minds of the profession was continually bearing fruit, indeed it is a question whether the laxity of ideas engendered by this Convention, has not been the cause of the general demoralization of thought in dentistry of a later period.

When Dr. J. H. McQuillen, and his co-workers, called a meeting at Niagara Falls, August, 1859, it was met at once by a meeting at New York at which a resolution was passed, "That it is the duty of every dentist, who desires the advancement of the profession, to attend the Convention at Niagara Falls and use his influence against any action tending to dissolve the American Convention, or to *create any delegated organization.*" Notwithstanding this opposition the "American Dental Association" was formed and outlived all contention, and became the representative body of the Northern States, the civil war having divided the professional sentiment, as it did in many other directions. The Southern Dental Association then became the representative body of that section until the change was made that led to the formation of the National Dental Association. While this became a useful and powerful organization, and still continues as a branch of the national body, it is not the purpose of this paper to follow its fortunes or to criticise its methods, for these are practically those of the American Dental Association.

The history of the latter body is too fresh in the minds of all present to make it necessary to enter into details. Suffice it to say, that its work, upon the whole, was more satisfactory than any of the National Associations that had preceded it, and when

its career was closed, it was not from lack of interest in its membership, but due entirely to the effort to bring into unison and weld into one harmonious body, the professional elements, both North and South.

The laws of this Association were based on those of the American Medical Association, which, in the opinion of the writer, was the first error. Dentistry had separated from the mother profession for good and sufficient reasons and should have met these new conditions with original laws, freshly imbued with new experiences and framed to meet the ever-changing contingencies of a future, full of possibilities of development in a young and energetic calling. The grafting of effete laws and customs upon a youthful organization is a dangerous proceeding and must result in eventual weakness, if not death.

The American Dental Association provided for two classes of members, delegates and permanent. The delegate must be properly certified by his local society, and this was accepted without question. Having attended one session he could make application to become a permanent member. This being settled, and it was ordinarily accomplished by transfer from the delegate roll to the permanent at the will of the Treasurer and Secretary, the member need not give any further attention to securing a certificate from the local society, for he had become a fixture and as long as he was correct in deportment, and paid his annual dues, he need not concern himself with anything relating to the progress of dentistry. The tendency of this was to create an interested clique, the members of which became simply a professional club. They naturally enjoyed the yearly outing and the social life that resulted. This latter had more attractions than the meetings, with the result, that a large body could always be counted to meet in the lobby of the hotel, while the few would endeavor to uphold the purpose of the gathering. This permanent membership eventually brought in a majority of persons who, while in themselves, had little interest in scientific advancement, but did have in the success of certain persons who, in their judgment, were qualified to fill the various offices. Hence this contingent met yearly and discussed, not papers, but the availability of candidates. From the first day until the election, the political atmosphere filled the hotel. Each year found new accessions to the number in new transfers from the delegated body and a continued dropping out of those

who failed to find in the organization a scientific home. That this would have eventually disrupted the American Dental Association is beyond question had it continued a few years longer as a national organization.

The present essayist long since protested against this permanent membership influence and tried to bring to bear sufficient arguments to have that clause removed from the Constitution. His efforts in this direction culminated in an earnest appeal to the members in his address before that body, as President, at its final meeting at Old Point Comfort. His efforts, however, were of no avail, and the National Dental Association was organized under the same rule and was followed by the same results. There was the hope that when the American Dental Association united with the Southern Dental Association that then and there would be organized a body free of the defects of all preceding associations, and that the profession would have one based entirely upon scientific ideals. The result was most disappointing, for, not only was it not thus organized, but it started at Old Point Comfort, as no association should have started, upon a patch-work constitution, made up of clippings from a series of laws of sundry organizations. This ill-fitting garment was adopted as a whole, and called forth the remark of the temporary President, Dr. J. B. Rich, "That he could not see how any society could work under such a constitution." It managed, however, to survive this defect in its birth, and has lived to the present time a somewhat checkered existence. Its term of life does not promise to be a long one, for, while it took a new name and many new members from the South, it was practically the old organization with all the defects already noticed. It was again grafting a living shoot upon a dying trunk, with the result that dry-rot has already begun and it is only a question of time when the tree, still in its youth, will perish.

It is not difficult to epitomize the cause of this assured downfall. The National Dental Association was organized with a permanent membership. All the old members of the American and Southern were transferred by the stroke of a pen. This made at once a large body with identical interests and would, had these interests been in the direction of dental progress, have made it a power in America, but for various reasons, principally extended travel, reducing attendance, leaving a large majority of those present more interested, as previously stated, in matters not profes-

sional and finally resulting in these annual gatherings becoming social centres of political life, the work being centralized upon the few, not entirely lost to old ideals, while the business has been entirely transacted by a sub-central organization, called the "Council." It is very safe to assume that very few of the members have any idea, or have they any voice in the management of these annual gatherings. They go and return and are only made wise when, a year after the meeting, they will be furnished with a bound copy of the proceedings, that may or may not enter into details. If we are to judge by the emasculated report of this body furnished by the Dental Cosmos in the February number, the members will be given just so much as those in authority may deem proper.

The National Dental Association, as it is controlled to-day, is governed by men doubtless with earnest desires for its good, but that it is not its highest good is clearly evident. They are not the men who make sacrifices for the profession, who delve in laboratories, or burn the midnight oil to solve problems for its future benefit, but they do labor strenuously at one period in the year that Dr. Blank may be exalted to the Presidency and that the other offices may be filled by those supposed to be qualified. Is this the end of all our endeavor? Is American dentistry sunk so low that it cannot evolve aspirations beyond the mire of political ambitions? Observation and experience must formulate the answers. If the turn in the tide ever comes it must be, and will be only, when a new birth is experienced and the old things are cast into the scrap heap of worthless organization machinery.

The last meeting of the National Dental Association at Buffalo was, in some respects, an improvement over preceding annual gatherings, but in others it was the most unsatisfactory and unpleasant of any the essayist has ever attended. Its history, interesting as it is, need not be repeated here. Part of its action in connection with the transfer of the International Dental Journal is detailed in the December number of that periodical. When the history of that journal comes to be written, it will not be complete until the course pursued by those in authority at that meeting is fully exposed. In causing the death of the only independent dental journal in America, it placed the halter round its own neck, for it cannot be possible that the right thinking men of this country will sustain an organization with apparently such a lack

of higher principles, as has been manifested by the controlling element.

It is with some hesitation that your essayist approaches the subject from the view-point of reform. It is not difficult to chart the rocks and the shoals that have wrecked other bodies, but it is by no means a simple task to pilot the vessel into deep waters and to a haven of safety.

The dental profession in America has not had time to outgrow the defects of its origin. These can be eradicated only through a broader education than the majority have been able to secure and this may take some generations before it is accomplished. The result of this is a want of unity of sentiment, class against class, rather than professional harmony.

The active workers in dental organizations of all kinds, local, state and national, may be classified under four divisions. First, the majority who regard organized effort as a means of social enjoyment, a season of relief from the drudgery of the year amidst congenial surroundings, accepting the professional accompaniments as a valid reason for calling the members together, but not personally an attractive feature. From this element is drawn the political cabals, that have weakened all the national dental associations thus far organized.

The second class consists of men deeply interested in association work, but who regard numbers as essential. They point, with some show of reason, to the work accomplished by the profession in Great Britain, after having brought together the largest body of dentists in the world; and the American Medical Association, with its several thousand members; and the American Association for the Advancement of Science, and claim that numbers inspire enthusiasm, and insures the necessary financial support needed for the success of important measures. That this is all true needs no argument, but it is the mob as compared with the well-drilled regiment, and the professional mob lacks cohesion, is incapable of steadily advancing with a fixed object, and, in the end breaks up into cliques, that eventually impair, if they do not destroy the value of the association. It is a question of quantity against quality and the latter must perforce remain in the minority.

The third is a comparatively small class, that would divorce dentistry from its mechanical relations and bring it into harmony with the medical profession. To accomplish this they would rele-

gate prosthetic dentistry to specialists, make the college course to consist of purely medical subjects and in this way remove the stigma attached to stomatology. The best example of this class is found in the Section of Stomatology, American Medical Association. While it is true that this association has given the best work in its special line ever produced in any dental organization, and too much cannot be said in honor of its unselfish labor, it still remains true that it has cut out two-thirds of dentistry, the most important for the well-being of humanity. The writer would regard it as almost criminal were the dentists of the world to suddenly refuse to insert the product of mechanical dental skill. Were such ideas to be adopted the effect would be disastrous to the comfort, health, and even to the higher civilization of the race.

The fourth class, to which your essayist belongs, regards all the previous classes as worthy of consideration, but are defective in that they seem to be incapable of establishing a standard for the dental profession to work up to and make it its own.

The source of all national associations should be the local organizations. This the recent National Association, at Buffalo, set aside absolutely and decided that membership in that organization should originate in State Societies. The difficulty of arranging a national organization upon a local basis is one not easily surmounted, but it would not seem impossible to secure the co-operation of a sufficient number in the various centres of influence to make up an affiliated body of workers, prepared to aid in a movement for reform. The theory which the writer wishes to offer is that a representative National Association to be effective must have its origin in the highest standard of culture attainable, and the source of this culture must be in the local society. To make this of value some standard must be devised for the local body. This, in the writer's opinion, can be attained by making it imperative that each member shall produce a paper on a professional topic at a certain stated period. Instead of prizes, frequently given for the best work in some societies, let these papers indicate the qualifications necessary to produce a class worthy to hold membership in a National Association.

The foregoing presupposes that a National Association has been suggested and in process of organization. Delegates, from the class described, are sent to meet other delegates at a given locality and the process of organization begins. The rules prepared

should be confined to those necessary for the orderly government of the body and for its continued life. To effect this latter object a division of service will be required, limiting the term required of each delegate, to *one, two, three or four years,* the latter period not to be extended except by special request of the local society.

The National Society should select its officers through a committee appointed by the meeting, the term of service of which not to extend beyond the session. All business should be conducted in open meeting, but limited to a specified number of minutes. The members of this national body should be divided into sections of ten, not, as now, for the purpose of hearing papers read, or to critically examine these, but to select one or more of the number to prepare a paper or papers, on subjects chosen or selected, and these to be read at the next annual meeting. This should provide a sufficient number of valuable essays for any meeting to digest and discuss with profit and interest. The social side of such a meeting will naturally take care of itself.

This, the main framework of a National Association, may be considered as Utopian, but the writer feels that its simplicity should commend it to those seeking a safe and quiet refuge for the results of scientific work. That such an association would be a centre of advanced results is beyond question. Personal ambitions, if not entirely excluded, would be minimized, for the main object of such an association would be the centralization of scientific thought. With this view carried out it would become an exemplar, infusing into the dental profession generally a lofty professional spirit, that should be able to meet severest criticism, and, at the same time, be perpetually demanding by example the best there is in the life of dentistry.

Whether this idea of an association be accepted or rejected as an impossibility, it must be conceded that the present national organization, founded, as it has been, on all that preceded it, does not meet the demands of a scientific body of men and should give place to something more in harmony with the advanced sentiment of the twentieth century.

There is a fifth class, by far the largest of those enumerated, but these live solely for self, taking no interest in association work, or the literature of the dental profession. These are the stragglers of the army and need no consideration.

The State Societies have been purposely omitted in this generalization. The State Society is a legislative body and the writ-

er's experience has been that they are poorly adapted to the needs of a scientific organization, indeed, when the attempt has been made to combine legislation with science, it has resulted in well-deserved criticism. With the State Societies gradually becoming the source from which the State Examining Boards derive their origin, it will become more and more difficult to eliminate politics from them, hence they can have no place in any plan devised for reform in dental organizations.

In the opinion of the essayist, any effort to resuscitate the present National Dental Association must result in failure. Spasmodic life may be given it, but this cannot last, as it has no foundation of sufficient professional strength that can promise lasting results.

The writer regrets to be forced to the conclusions enumerated, for nearly all his professional associations are bound up in the American and National Dental Associations, but he feels he has a higher duty, that of obedience to assured convictions, that the permanent well-being of the dental profession can be secured only through a body based on the highest scientific culture attainable by each individual member.

With this view this paper has been prepared, not with the expectation of finding agreement as to details, but in the hope that out of disagreement some avenue may be found in which all who are deeply imbued with lofty professional ideas, may humbly walk, ever progressing to that standard which was the aim of the Fathers and should be the ambitions of the sons, until the present crudities of our work have been entirely eliminated and we, as a profession, be able worthily to stand before men as an honorable calling, cultivated in that *esprit de corps* that makes for professional life.

AN ACCURATE METHOD IN ORTHODONTIA.*

C. A. HAWLEY, D. D. S., COLUMBUS, OHIO.

At the Fourth International Dental Congress, at St. Louis, Mo., it was the privilege of the writer to read before the Section on Orthodontia, a paper entitled "The Determination of the Normal Arch and Its Application to Orthodontia," a paper in which was presented a method of accurately planning beforehand any proposed change in the form of the arch, or locating in advance the new line of occlusion. The line of occlusion has been defined by Dr. Angle as "the line of the greatest normal occlusial contact," and in the lower arch, passes over the crests of the buccal cusps of the molars and bicuspids and the cutting edges of the cuspids and incisors; in the upper arch it will be found along the sulcus, between the buccal and lingual cusps of the molars and bicuspids and across the lingual surfaces of the cuspids and incisors, about one-third the length of those surfaces from the incisal edge. The method referred to above, and which forms the subject of this paper, locates this line of occlusion directly in the lower arch. In the upper arch, it locates a line passing through the crests of the buccal cusps of the molars and bicuspids and the cutting edges of the incisors and cuspids and from this line the line of occlusion proper is easily found. In either case the line determines the shape, the width and the length of the arch.

On the occasion of the presentation of the former paper and since that time, fears have been expressed that, in bringing into orthodontia a mathematically and geometrically calculated plan, we would restrict or eliminate the feature of artistic judgment, and that the method leaves no room for the exercise of the judgment in changing the form of the arch to satisfy the requirements of the various types.

These fears or objections have been due to a misconception of the elasticity of the method in its application. In this paper, I wish to add something to the clearness of presentation of the method, and, in reply to the above mentioned objections, will make the proposition that, in so far as hampering, in any way, the use of the judgment in the art requirements in orthodontia, this method lays down the most valuable principles and forms the most

* Read before The New York Institute of Stomatology, April 3, 1906.

important basis upon which artistic results in orthodontia must be accomplished; and, instead of restricting the variation of the arch to correspond to different types, it forms the only safe guide for procedure in such variation.

The mathematical features of the denture comprised are in the occlusion of the teeth and the form of the arch or the line of occlusion. The normal occlusion of the teeth has been observed by Dr. Bonwill and others, and been made the basis of modern orthodontia by Dr. Angle. There remains no question concerning the normal and most desirable occlusion of the teeth or the desirability of restoring and preserving that occlusion, wherever possible.

The ideal form of arch is determined with some difficulty and we might admit that there is no ideal arch for all cases. Dr. A. H. Thompson has made extensive observations of the form of arch in different races and gives us the following typical forms: Fig. 1.

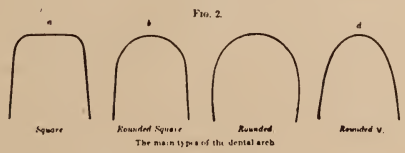


Fig. 1.

"The square arch," he says, "is found usually in persons of strong osseous organization, of Scotch or Irish descent, *i.e.*, Gaelic extraction." * * * "The rounded square is the medium arch usually found in ordinary, well developed Americans." * * * "The rounded arch is quite characteristic in some races, as the brachycephalic South Germans." * * * "The rounded V is the arch of beauty and that most admired in women of the Latin races."

Dr. Bonwill, in his work on the Articulation of the Teeth, examined, as he says, 4,000 dentures in living persons and 6,000 skulls, and, from these observations established as a standard, an arch based on the equilateral triangle and conforming closely to the most perfect arches found. This arch (Fig. 2) is not exactly the form of any of the types illustrated by Dr. Thompson, but seems to be a combination of the rounded square and the rounded V, as might be expected, when we consider that Dr. Thompson is presenting distinct racial types and Dr. Bonwill an ideal selected from the most perfect dentures found

in his investigations. This Bonwill arch conforms essentially to the typical arch illustrated in Dr. Black's Dental Anatomy, as shown in Fig. 3, taken from the "Text Book of Prosthetic Dentistry," by Essig.*

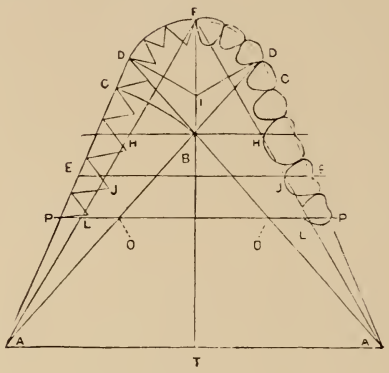


Fig. 2.

While Dr. Bonwill's efforts were, in the main, directed toward the application of his principles to the construction of Artificial Dentures, yet he seemed to realize their value in Orthodontia, for

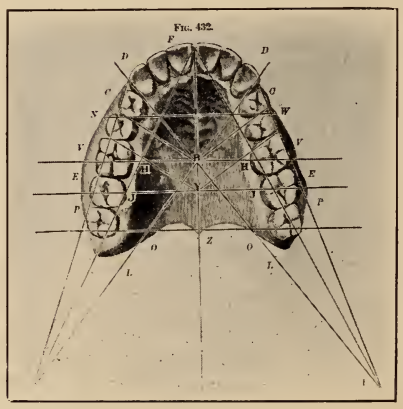


Fig. 3.

he says, "The study of these laws will enlighten you in the true science of correcting irregularities." And if his work really disclosed the correct principles of the natural movement of the jaws,

* This conformity would be closer if the Bonwill diagram were correctly drawn. In the illustration, the triangle is not equilateral, the sides being longer than the base.

and this seems to be established beyond question, then any science of Orthodontia that aims at broad and comprehensive work must take into account these principles and produce in the living jaws the conditions that make their normal movements possible by establishing the normal occlusion of the teeth and the size and form of arch to correspond to the size of the teeth and the probable width between the condyles.

In Fig. 4, we have Dr. Bonwill's geometrical figure, an equilateral triangle, A F G, inscribed within a circle, its base F G, representing the distance between the condyles, which varies in the living subject from 3 to 5 inches. According to his plan, in

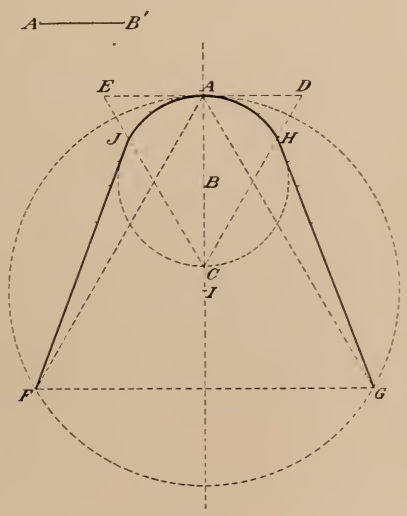


Fig. 4.

artificial dentures, the teeth are arranged with the cuspids and incisors in the arc of the circle A J C H, the size of which varies according to the size of the teeth selected for the case, and this selection is left to the judgment of the operator.

In order to use this principle in Orthodontia, where we have the size of the teeth given us, and from their widths the diameter of the circle A J C H, we must reverse the order of procedure and find a connecting relation between this circle and the equilateral triangle, A F G, or the circle within which it is inscribed. This connection is not described in Dr. Bonwill's writings, so far as I have been able to find. It is found in the triangle E D C, constructed with its apex at the point C, on the diameter of the circle

A J C H, and its base tangent to the same circle at A, the sides passing through the points J and H, located on the circle by the distance of the radius from A.

In application, to construct the diagram, we take the radius of the circle A J C H from the combined widths of the central lateral and cuspid teeth shown at A B. With this radius A B, upon the line A C, which becomes the extended diameter of the circle, draw the circle A J C H and, with the point of the compass at A, mark off the radius upon the circumference at H and J. We have here the arc of the circle upon which the six front teeth are to be arranged, but know nothing of the size of the triangle A F G. From C draw the lines C E and C D, through H and J, extending them indefinitely and draw a tangnet to the circle A, cutting these lines at E and D, and forming an equilateral triangle E C D. Take single arch line can be used. The former method was of great

Fig. 5.

one side of this triangle as a radius and with one point of the compass at A, and the other upon the extension of the diameter at I, describe the large circle A F G. We can now mark off the radius six times on the circumference of this circle and connecting the intervening points, draw the triangle A F G. Then draw the lines F J and G H and we have the desired diagram or arch upon which we may measure off the teeth with the width as found in the mouth.

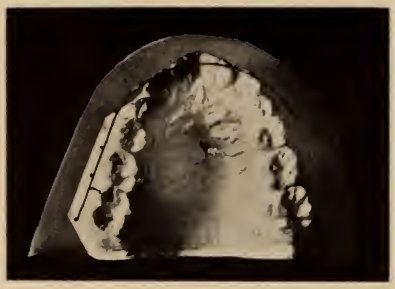
The teeth can then be drawn in full, as shown in Fig. 5,which is the plan I adopted in my first working with this method, or the advantage to me at first, giving a better view of the completed work. My present method of working is shown in the following case: Class II, Div. I, Age 10, of which Fig. 6 shows front and side views. The deciduous molars and cuspids are present. The method of calculating this arch will be explained later. Fig. 7

shows the occlusial views of both upper and lower teeth. The arch is transferred to a piece of transparent celluloid* and by placing this in proper position on the model, every movement necessary to correct the case is accurately shown. Also the shortening of the arch is shown and this is very valuable in calculating the effect of proposed movement on the outlines of the

Fig. 6.

face. I wish to call your attention here to the small amount of expansion indicated in the lower, compared with the upper, jaw. In this type of cases, this fact indicates that the narrowness of the upper jaw has forced the lower backward, as the causes which operate to narrow it do not obtain in the lower and it seeks a distal position in order to obtain a comfortable occlusion. Thus the

* The use of a transparent substance was first suggested to me by Dr. L. P. Bethel.



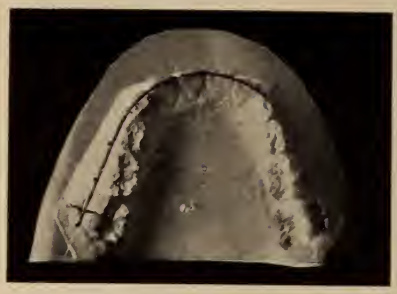


Fig. 7.

condyles are carried back to an abnormal position in the glenoid fossa. This is indicated, too, by the fact that frequently when the upper arch is widened, the lower comes forward easily and never requires mesio-distal retention more than that furnished by the cusps of the molar teeth. This fact was brought forcibly to my attention by the study of cases of this kind with the diagrams. The diagram is used in the progress of the case as a constant check on the movement, measuring in the mouth with compasses, from time to time, and comparing with the diagram. Or, if one wishes, the celluloid can be placed in the mouth at any time and the positions of the teeth noted there directly. Fig. 8 shows the occlusial views of this case finished, and Fig. 9 the front and sides.

In the next case (Fig. 10), the upper molars are in lingual occlusion, and the question would arise (Fig. 11) as to whether the lower molars had been pushed outward. The shortening of the arch and the absence of the second molars give that appearance. But (Fig. 12) the diagram shows that this is not true,

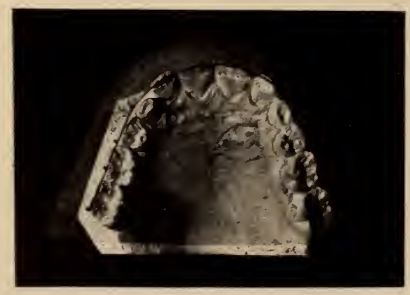


Fig. 8.

Fig. 9.

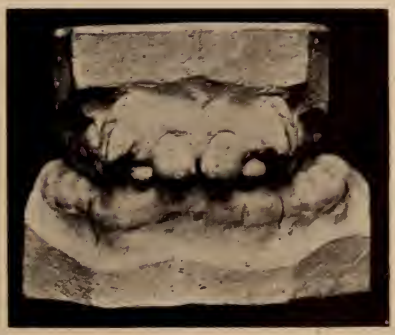


Fig. 10.

Fig. 11.

and indicates the desired movement in both arches. Fig. 13 shows the completed arches and(Fig. 14) occlusion of the finished case. These two cases I will consider sufficient to illustrate the method of work. I did not formerly, nor do I now, wish to be understood as insisting on this form of arch in detail in every case. If a uniform arch were to be adopted, this one of Dr. Bonwill's would undoubtedly be the nearest adapted for universal application. It is a standard, capable of being produced by exact geometrical and mathematical rules, and conformed to any size of teeth. Without, myself, at this time discussing the question of how closely we should conform our work to this arch in all cases, I wish to quote for your consideration the opinion of Dr. William J. Brady in a paper entitled, "Some Points Concerning Occlusion," read before the American Society of Orthodontists, at St. Louis, June 12, 1901. Referring to the Bonwill arch, he says: "The facts are, that if nature were not thwarted in her purpose, every dental arch would be upon these perfect lines. The mechanics

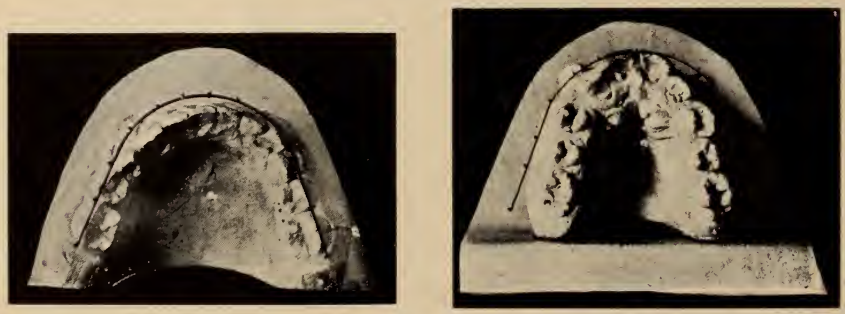


Fig. 12.

Fig. 13.

of the case compel an arch of this form to permit of the highest usefulness and the mechanical forces of mastication produce this arch as nearly as possible. Even in Mal-occlusion the teeth follow this perfect form just as much as the mechanics of the case admit. The mechanics of the case demand an arch of a certain definite form, because of fixed and unchangeable laws, and not because somebody thinks it ought to be that way or because it makes a pretty diagram on paper. As long as the jaw comprises an equilateral triangle, and rotates upon one condyle at a time, when moving laterally, just so long will this form of arch be the one unvarying end that nature tries to attain in her way, and be the one final result that we should seek in our work. Until the lower jaw changes its form or its motion, all men will (or should have) arches of the present form, and race, color, temperament or hobby, fad or ism will not change the facts in the least."

My own argument, at this time, is for its use as a standard, a basis of diagnosis and study and the accurate and systematic planning of the work, estimating beforehand what we wish to

Fig. 14.

accomplish, and working quickly and accurately to that end. We should not attempt to change the form of any arch without a definite end in view. It will greatly lessen the discomfort to the patient and the time for the operation. In my own work, in the study of cases, and as a guide in their progress, this method has been invaluable. To illustrate a plan of making variations from the standard arch, we will refer to Fig. 15, where we have the standard Bonwill arch and a pointed arch drawn from it. The Bonwill arch represented is the arch for the size of teeth in the case. If we wish the pointed arch to be one-quarter inch narrower, we draw the lines for the molars and bicuspids one-eighth of an inch within the standard arch on each side. The nar-

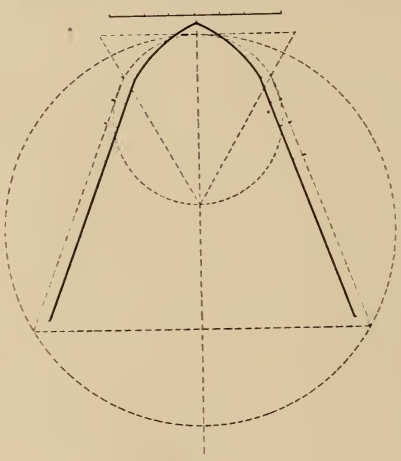


Fig. 15.

rower arch will necessarily be longer than the Bonwill, and here we have the choice of carrying the molars backward and leaving the lips stationary or of leaving the molars in their place and carrying the lips outward. Similar calculations could be made for a wider arch. We may thus make calculations for any type and any temperament, and this accurate calculation lays a safe foundation for artistic results in Orthodontia. This foundation also opens the way for a scientific examination into the question of types and temperaments, in their relation to the teeth, a question about which we know little that is of value.

By restoring normal occlusion and a form of arch in harmony with the size of the teeth, that will admit the natural movement of the jaws, we will thus, so far as the mechanism is concerned,

obtain the natural development of the denture. And in retention, we will guard most effectively against any final retrogressive changes that might take place, by conforming the arch to the natural mechanical forces of the jaws. From the artistic side of the question, while nature may not, in all cases, have furnished teeth exactly adapted to the individual, yet in the present develpoment of Orthodontia, the hypothesis that she has is a safer basis of work. For, when we consider all the evils of extraction as set forth by many men and especially by Dr. E. A. Bogue, we, indeed, must hesitate to trust our conceptions of improvement by mutilation, as compared with the utility of the denture when the teeth are placed where nature intended they should be.

So far, in dealing with this subject, we have presumed that the centrals, laterals and cuspids were erupted or that the denture was practically completed. But to be scientific and progressive, Orothodontia must assume an attitude of prevention in early life. This necessitates a recognition of dwarfed and abnormal conditions as soon as they appear. Very early in the use of this method, I found that in a large number of cases coming into my hands, the necessary data could not be obtained. Most often the cuspids were unerupted, and, in many cases, the laterals also. My first recourse was to measure the central incisor, then refer back to a case previously treated, having a central of the same width, and, presuming that the teeth were always in proportion, use that arch. This method was adopted in the case illustrated in Figures 6, 7, 8 and 9. While furnishing a fairly accurate guide, the variations that were at once apparent led me to enter into an investigation of the proportionate widths of teeth, as they occur in the same mouth, with the object of establishing a series of approximate arches for use in young patients. For this purpose, I have collected measurements of over 100 sets of teeth,* using the following forms:

Collection of.....

Model No.....

Sex.....

Age.....

* In this work of collecting measurements, I have received valuable assistance from Drs. E. H. Angle, Frederick McKay, J. L. Young, Herbert Pullen, L. P. Bethel and Walter Ellis.

Upper.		Lower.	
Right.	Left.	Right.	Left.
Cent.....	.....	Cent.....	.....
Lat.....	.....	Lat.....	.....
Cusp.....	.....	Cusp.....	.....
1st Bic.....	.....	1st Bic.....	.....
2nd Bic.....	.....	2d Bic.....	.....
1st Molar.....	.....	1st Molar.....	.....
2nd Molar.....	.....	2nd Molar.....	.....
3d Molar.....	.....	3d Molar.....	.....

Width of Original Arch.....

Width of Expanded Arch.....

Dr. Black, in his "Dental Anatomy," has published a table of measurements of the teeth, in which is found the amount of variation in their mesio-distal width, but without reference to their variation in the same mouth. Selecting these measurements, we have:

Central Incisors.....	.31	to	.39
Lateral "	.19	"	.29
Cuspids "	.27	"	.35
First Bicuspids.....	.27	"	.31
Second "	.23	"	.31
First Molars.....	.35	"	.47

It will be noticed that, with the exception of the first bicuspid and first molar, there is a uniform variation of 8 points, the first bicuspid making 4, one-half that amount, and the molar 12. These measurements do not represent the greatest extremes, but those occurring outside these figures are rare. Now, if the teeth were found in the mouth in the same proportion in respect to their greatest and least width, that is, if with a .31 central, we would find a .19 lateral, a .27 cuspid, .27 first bicuspid, .23 second biscuspid and .35 molar, and so on with each size of central, we could make out the radius of each size central and from these draw proportional diagrams. But such is not by any means the case. With a .31 central, we often, in fact, usually, find a lateral .26 or .27, and the cuspid may be quite small or well up in the scale, or we may have a central and lateral in good proportion and the cuspids much larger. In order to discover the nature of this variation, I selected from the 100 measurements all the cases of each width of central, and made of each of them a table.

The number of cases of each size central was .31—15, .32—7, .33—16, .34—16, .35—9, .36—14, .37—13, .38—5, .39—2. A number of the 100 cases I was unable to use, on account of missing teeth or so great variation as to question the accuracy of measurement.

Collecting each of these sets, I have nine tables, of which this one of the .35 central is an example:

Central	Lateral	Cuspid	1st Bic	2d Bic	1st Molar
.35	.24	.31	.27	.27	.41
.35	.28	.31	.29	.30	.41
.35	.25	.30	.25	.25	.42
.35	.28	.31	.28	.27	.42
.35	.27	.33	.29	.29	.44
.35	.24	.30	.30	.28	.41
.35	.28	.33	.29	.26	.40
.35	.26	.30	.27	.27	.43
.25	.27	.32	.27	.27	.41
Average:					
.35	.27	.31	.28	.27	.42

Taking the average of the widths of the other teeth, I have the average width of teeth that will occur with each width of incisor and from these averages the average radius which will give us the probable arch for each size central.

Cent'l	Lateral	Cuspid	1st Bic	2d Bic	1st Molar	Radius	Corected radius
.31	.26	.29	.26	.26	.39	.86	.86
.32	.26	.30	.27	.26	.40	.88	.88
.33	.27	.30	.28	.27	.41	.89	.90
.34	.28	.30	.28	.28	.42	.92	.92
.35	.27	.31	.28	.27	.42	.93	.94
.36	.28	.32	.28	.28	.42	.96	.96
.37	.28	.32	.30	.29	.42	.97	.98
.38	.28	.34	.30	.29	.44	100	100
.39	.31	.34	.31	.29	.44	104	102

In the last column I have placed what I will call the corrected radii, in which we get an ascending gradation. I wish, at this time, to point out the nearly uniform gradation of the first molar and later refer to its significance. Now, taking these corrected radii, we will get an arch for each width of central and I will propose these as a basis of diagnosis, study and treatment of cases where only part of the teeth are erupted, or under the age of

12. Or using the radius in hundredths of an inch for comparison they may be used as a guide for all cases, for where we can measure all the teeth we have only to select the diagram with the corrct radius, and measure in the teeth. Remembering that these arches are only averages and smaller or larger teeth will constantly occur in connection with the particular central, is there any indication by which we can judge in which direction this variation will occur, *i. e.,* toward smaller or larger teeth? I think we have this in the first molar and this tooth is always present at the time of the eruption of the central incisor. As the first molar varies up or down from the average width, I believe the rest of the teeth will vary. For instance, we will suppose we have a case in which the central incisor is .34 and the first molar .42. If I had a second case with the same size central, but with the first molar .44, I would presume that the lateral and cuspid and all the rest of the teeth would be likely to be large and would select the next larger arch. In this way I think we have the key to a pretty accurate judgment of the future denture. In making up these averages, I have tried to err, if at all, on the side of the larger arch, believing if we do get the arch slightly larger than the teeth will fill, if it is properly shaped and the teeth are placed in normal occlusion, as the amount will, at the worst, be only a few hundredths of an inch, the pressure of the cheeks and lips, the influence of the occlusial planes and the pressure forward of the second molar in eruption will close the spaces. Nature has given us an example of the wisdom of this provision by making the combined widths of the temporary molars considerably more than that of the bicuspids, which are to take their places.

Similar tables were made for the lower teeth, and the result makes it evident that the uniformity of lower arches, drawn from the measurements of the lower incisors and cuspids, is not to be depended upon. While the lower bicuspids and molars are fairly uniform in their relation to the upper, within the same mouth, the incisors and cuspids are not. This lack of uniformity is probably compensated for in the inclination of the teeth and the overbite. Without discussing these variations at length, I wish to advise that instead of drawing the lower arch from measurements of the lower teeth, as described in my former paper, the radius for the lower be taken from .13 to .23 of an inch shorter than the upper, depending within this variation on the size of the teeth or

the distance from the line of occlusion to the crest of the buccal cusps.

In illustration of my use of these arches, let us take the case of a child eight years of age, Fig. 16. We have here erupted of the permanent upper teeth, only the central incisors and first molars, and in the lower the centrals, laterals and first molars. All of the deciduous molars below have been extracted and the

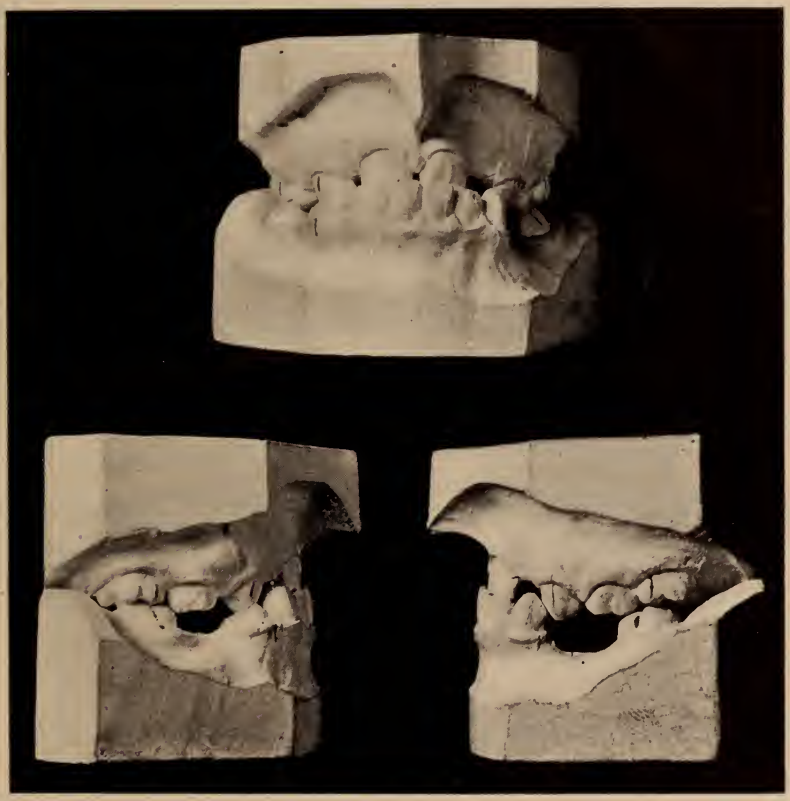


Fig. 16.

first deciduous molars above. The arches are consequently contracted, especially the upper, in which the centrals are in lingual occlusion. The centrals are .33 wide and the molars .37, while the average molar for that diagram is .41. As the molar is small, I judge we are likely to find small laterals and possibly bicuspids, as these are the teeth that vary most, so I would

select no larger arch than that for .33. I chose to develop this arch to the largest safe point, because the child has had an operation for the removal of adenoids and needs all the development of the nasal passages possible. Fig. 17 shows the development of the arch that will be necessary.

In Fig. 18, we have another case, also a child of eight, in which the occlusion is developing into distal. Fig. 19 shows the occlusial view of the upper teeth. In this case we have a .38 central and .42 molar, while the scale gives us a molar .44, so we will use the .38 arch and expect fully developed teeth.

It might be argued that it is unnecessary to widen this arch with the temporary teeth at this time, that the natural growth of the jaw will be sufficient to make room for the teeth. But you cannot place the incisors in alignment without either widen-

Fig. 17.

ing the arch or placing them considerably forward of their proper position. If the whole arch is widened, the crowns of the developing bicuspids are carried with the temporary molars and the chances of their erupting in mal-occlusion is greatly lessened.

In regard to the question that may arise as to whether the first molars, when they erupt, should normally be in their proper bucco-lingual positions, the study of cases by this method leads me to believe that they should. Notwithstanding the fact that few children have been brought up under conditions where the teeth have been properly and normally used, yet I have found enough cases where they have erupted in their full bucco-lingual width, to, I think, justify me in the above conclusion. One of these, a boy of seven, I will show in Fig. 20. Fig. 21 shows the occlusial view. The incisors are .34 wide, the molars .44, which

Fig. 18.

Fig. 19.

is .2 larger than the average, and are in their correct bucco-lingual position, as is shown by the diagram.

Enough has been shown to illustrate this method and allow you to judge of its value. There are many other interesting points in connection with these measurements that may prove

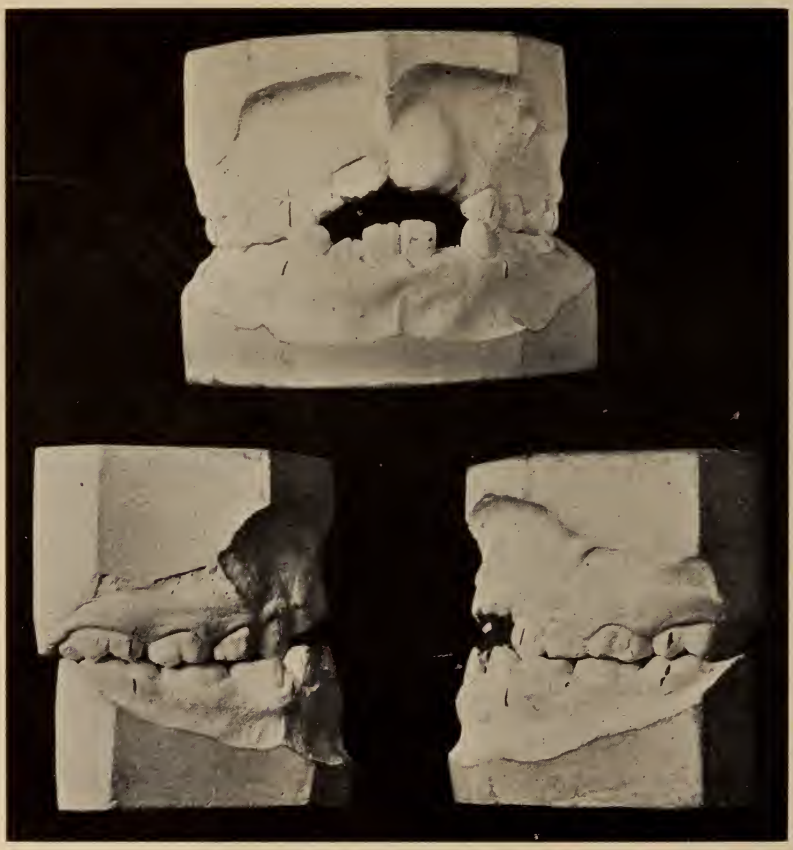


Fig. 20.

valuable, but their discussion is not within the limits of this paper.

Again, in conclusion, as to the matter of types, without raising the question here as to how much variation is required in the different races and temperaments or whether such variation is desirable at all, or as to whether we are not safer in our present

Fig. 21.

knowledge on the subject to sacrifice a possible improvement in artistic effect, to greater utility, by conforming to the Bonwill arch, without discussing these questions, I will say that the only safe basis upon which to make such variation is a carefully calculated arch from these measurements. And as to variation for artistic effect of any kind, as mathematics is the basis of architecture, music, painting and all the arts and sciences, so I believe will these principles underlie the best that we will accomplish along these lines in Orthodontia.

It is perhaps unusual to present a paper on a subject pertaining to Orthodontia, without any reference to appliances, but I have little to say on that subject at this time. The only appliance that I have used, with which I could have the necessary control of all the teeth, is the expansion arch. There is just one point in

Fig. 22.

using this appliance, that may be essential to the argument of the paper. In moving the temporary molars and cuspids we find their great constriction at the neck and the consequent abrupt slope of the enamel allows the ligatures to work under the gums too far and cause irritation. To obviate this trouble, I reverse the clamp bands on the second temporary molars, where possible, and carry a wire along the lingual surface to the cuspid. It is soldered to the clamp band at the mesio-lingual angle shown in Fig. 22, on a model of permanent teeth. With this lingual wire in place, we have only one litgature necessary on each side and the wire holds so that it cannot slip down upon the gums. This arrangement is also valuable in many cases of fully erupted dentures.

NOTICE!

The allied societies extend the distribution of the present issue beyond their own membership to a selected list of representative dentists who are presumably in sympathy with independent journalism.

It is hoped that those who receive the Journal will aid it by subscription and by promulgating the ideas for which this journal stands amongst their local societies. Please inform Dr. F. L. Bogue, 63 West 48th Street, New York City, of any change in address.

COMPOUND AND COMBINATION FILLINGS.*

HORATIO C. MERIAM, D. D. S., SALEM, MASS.

Medicine, sometimes impertinently, often ignorantly, often carelessly called "allopathy," appropriates everything from every source that can be of the slightest use to anybody who is ailing in any way, or like to be ailing from any cause. It learned from a monk how to use antimony, from a Jesuit how to cure agues, from a friar how to cut for stone, from a soldier how to treat gout, from a sailor how to keep off scurvy, from a postmaster how to sound the Eustachian tube, from a dairy-maid how to prevent small-pox, and from an old market-woman how to catch the itch-insect. It borrowed acupuncture and the moxa from the Japanese heathen, and was taught the use of lobelia by the American savage. It stands ready to-day to accept anything from any theorist, from any empiric who can make out a good case for his discovery or his remedy. "Science" is one of its benefactors, but only one, out of many.

I place at the head of my paper this description of medicine because, while my subject is technical and can be made one of mere detail, I wish to keep before you that over and through all my thought extends the purpose to which all our operations and treatment should tend. The preservation and restoration of function, the relief and prevention of suffering and pain and aid that there may be a sound mind in a sound body. A scientist can claim distinction for ability to reconstruct a skeleton from a single bone. May we not claim that as "function is a determining cause of structure" we are aiding in preserving bones of a natural shape for the future scientist to study and in aiding function, we are also aiding the whole organization, and it is a pleasure to note that gradually we are recognizing that all our practice is overruled by the laws of anatomy and physiology. Though the biologist of the day can only echo the words of our poet:

"In warp and woof all destinies are woven fast,
Linked in sympathy like the keys of an organ vast;
Pluck one thread and the web ye mar;
Break but one of the thousand keys
And a paining jar through the whole will run."

Read before The New York Institute of Stomatology on Monday, April 2.

I am fond of the definition of the word "cure." To cure, to care for, to heal, to make sound or whole, to renovate, to correct; Curator, one who takes care of a museum or library; Curate of a parish; Curé, the curé of souls. To prepare for preservation; to regulate. In all of these we can see ourselves except in the care of souls, and here perhaps we may indirectly by keeping the body whole and fit for a good soul to stay in a long time. We gain when function is studied under laws and principles, when organs are studied in their natural connections. When structure is coupled with function and healthy and diseased action are studied as they pass one into the other. We are now at what may be called the manicure side of dentistry, but there must remain a large field that it cannot touch, and I offer no apology for asking you to tread again with me, some of the old paths, and see what variations have occurred since we last walked together.

One day, in my early practice, about 1875, a man knocked at the door of my office, and asked if I could send any relief to a friend in one of the rooms above, who was ill and whose tooth had just bgun to ache. I had some gutta-percha in my hand and without putting it down gave him a little oil of Cajaput or "Kiaputi Oil" as it is called in the East, on cotton for his friend, thinking it a remedy he could use without danger. On returning from the door, I noticed that my gutta-percha was sticking to my fingers, and I then began to use it with the oil of Cajaput for root-fillings, and later, when experimenting with gutta-percha, used it as an aid in filling large cavities by impression below the gum. We should now probably call this gutta-percha inlays. As a compound or compounded filling gutta-percha keeps its place. To the uses given in an early paper I add to-night, as a filling for partially emptied molars, erupted or any teeth that show imperfection before complete eruption. For this purpose it excels all other fillings. The cavity should not be excavated, but should be washed with peroxide, and a piece of suitable size dipped into oil, and then pressed into the cavity with a plodget of wet cotton, wet in alcohol, held in tweezers. I now use oil of sassafras in place of cajaput as the odor is less persistent. Such a filling acts as a plunger, carries out with some of the oil a large part of the moisture in the cavity, and hardening slowly can expand, and growing tighter under the pressure of occlusion, and mastication, will care for the tooth until completely erupted and further filling

easily possible.

For such a filling which, of course, is only an aid in care of the teeth of the very young patient, gutta-percha is the filling best suited. A study of substances that weld and adhere under water may reveal others, but this we have.

For a substance to use for covering applications or to seal in medicines, or combining with an essential oil to use directly for toothache, gutta-percha 1 part, oxide of zinc 3 parts, talc 3 parts, with a little ochre for coloring, is a valuable addition. This compound, unsuited for filling, is unequaled for the purpose referred to as it is not stringy, is easily worked and easily trimmed,—a thin wafer dipped, if preferred, in oil, is excellent to protect plastic fillings while hardening. A piece about the size of a pea can

be used when working without a clamp, for pressing into cervical cavities to hold up or down the rubber-dam when we are obliged for a moment to remove our fingers, and is also of value to retain space between teeth when required. I lay a special stress on the ease of trimming.

It is very convenient also for use as a matrix for No. 2 plastic fillings by pressing a piece between the teeth, shaping with warm instruments, this can remain as a protection from moisture until a subsequent visit of the patient. I frequently let the matrix extend somewhat higher than the teeth, bending forward this portion to cover the filling. The same method is followed in treating teeth. It is of great value in sealing arsicum preparations, though I have now largely abandoned arsenic. I use it also in

filling a portion of the cavity when using cocaine under pressure, bending the gutta-percha over and using it instead of rubber, as a plunger. The pits made in the cusps by attrition or occlusion.

Those caused by the wearing of exposed dentine present a condition which, though mechanically simple, call for study in their treatment, as here the hard usage of attrition must remain, after our filling. No. 3, a combination of spring gold and a cement offer an advantage over the foil-filling or gold inlays. Many of the cavities if taken early, and there is no use delaying until they have grown larger, are nearly round, and can be cut out with a fine drill, making a round pit; No. 5, a piece of spring gold wire; No. 4, selected by gauge to match the drill, can be threaded

and nicked in enough to twist off just outside the cavity, dipped in cement, carried in, and then ground smooth.

This will resist wear from expansion, transmit force and preserve color. They can still be used even when the cavities are large enough to produce ovals by setting in the center of the cavity as round and completing with gold foil the hard centre giving the desired resistance. No. 6. The very small natural pits can also be filled, and in the future we may make a larger use of gold alloy to give more harmony in color. The number of sizes of wire to be kept may be lessened by holding the end of a small size wire over a Bunsen flame, fusing and thickening the end, No. 7, which then may be filled to gauge and threaded.

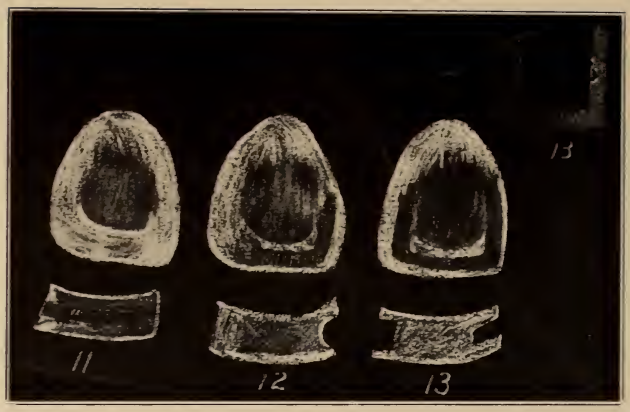
The filling of large cavities in the anterior teeth, often badly worn, or with thin edges; some of them subject to much strain,

by loss of the molars, that cause them to be used for grinding, is felt to be a problem to most of us. Perhaps I should say the subsequent wear of such teeth is the problem, for very few of those we see, even when from the hands of good men, but show that the strain is great both to teeth and fillings. To build to resist force and to distribute it so that the subsequent wear shall not destroy the filling is our task. It was led by failure to adopt the method of treating these teeth that I now use. I had filled the left superior central incisor on the cutting edge, a simple cavity made by wear. In a few months the patient returned, the filling showing dark around it. Removed the filling and found no decay, unless a cloudy look against the anterior wall could be called so. Refilled with care, only to be met with a like bad condition in a few months. Then I was forced to do some thinking for myself. I

had to consider adhesion, cohesion, resistance, and transmission of force. I had before cohesion and resistance to wear. I needed adhesion and transmission of force through the whole tooth, my poor filling had been beaten in its centre by occluding teeth, until it had curled away from the outer edges of the cavity and had leaked.

My remedy—a stout bar of spring gold plate, was set into the cavity coming far enough down to occlude with the under teeth. This was set in cement to about two-thirds of its width, and the remaining third finished with foil I had won. Nos. 8, 9, 10.

This has led into many subsequent operations involving the same principles. Extended sometimes to cases where there was

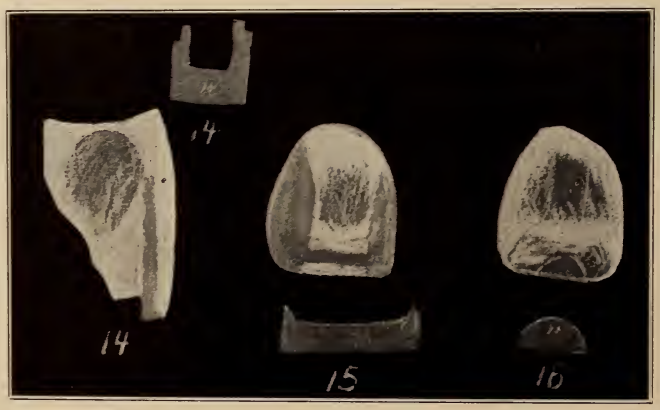


not enough wall to hold fillings or where the walls were thin, weak and, in some cases, checked or cracked. Some of you will say: "Why not crown?" There are some cases where one must work to keep things harmonious, and some, where patients value every particle of their anatomy and sigh over even the dust of excavating.

One I have just described. No. 11 is where the same conditions are present at the cutting edge, complicated by walls too thin to bear filling and good enough to keep if not undercut.

No. 12 is where the same conditions prevail, but extending partially along the mesial surface.

No. 13 is where the cavity extends completely to the cervical wall, both mesially and distally.



No. 14 shows a broad flat insertion to protect a thin or check in anterior wall, coming well up on the cutting edge, and No. 15 shows how to preserve good fillings in danger of displacement by wear. The tooth is wedged on each side to keep the filling firm, a slot-shaped cavity cut just back of the cutting edge extending into the filling, deepening a little, and ending in a pit drilled into each. The setting in cement is the same in all cases, and completed with gold, or gold and platinum foil. At times the wear takes a crescent shape and the form in the cases I have noticed seems to be accompanied with a thin front wall.

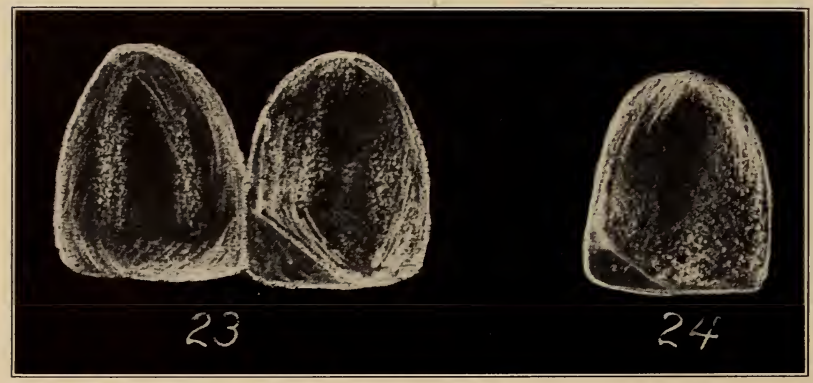
The gold I use is No. Fig. *d* 25 clasp for the worst cases, thinner, of course, when needed, and where color is the only object a piece of pure gold can be used. The resulting color in all these operations is satisfactory.

In the lateral and cuspid teeth the wear often takes such form

that the gold may be inserted in a half crescent form. Nos. 17 and 18. My cobbler fixes the heels of my shoes to save wear by driving in something like the above. Nos. 19 and 20 shows a case treated to meet an extra hard occlusion by inserting a pin and soldering.

Time is used as a measure of value and in business centres amounts almost to tyranny. So that we may look forward to some student of modern questions giving us a study on the increased cost of stopping.

Stopping in time is a factor in operating, and so is resting, and combined with the tendency of teeth to elongation is of value in sightly fillings and care of teeth. The crags and peaks that are with us once again on the grinding surface of molars may all be helped by calling on time to be our ally. No. 1. Dry-



ing the teeth and building on an adhesive cement after treating with chlor. of zinc, if sensitive, then grinding down together cement and tips, a little once in a while, will in a few years make presentable teeth, No. 22, with comparatively slight cavities, and give better results than can be had by crowning or tipping in any way the molar teeth, and may in some cases do away with filling altogether.

Some years since I opened with a wheel burr some minute cavities in the cusps of the molars and bicuspids, leaving them saucer-shape, to be cared for by attrition. The teeth did not decay further, and the patient escaped ten or more fillings. The teeth escaped all the loss that would have followed excavating. A broken central, No. 23, was treated by cutting the mesial surface

near the gum and also its cutting edge, filling with cement—the filling and grinding of the cutting edge was kept up for a few years, and now the patient has only a slight corner built on No. 24.

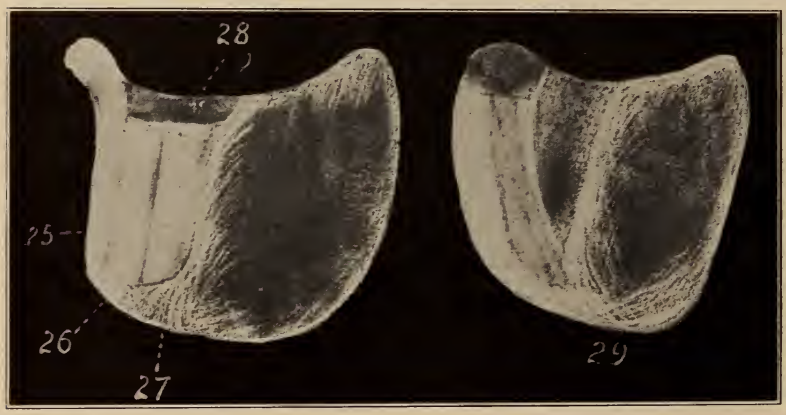
You can judge by this that I am not an enthusiast on cutting the teeth of the young even for inserting the new porcelain cement fillings, but prefer a strong adhesive cement unless for a special reason we require chloride of zinc filling. And here again we note a filling with a distinctly remedial action which makes it of great value when the conditions and future of the tooth are reckoned of more value than any mode of operation.

Some years ago I gave a clinic and had taken mental notes for a paper, when I saw that one of your good members had described what I am now to give. I have, however, decided to go on, only making no allusion to amalgam, as that was given. My faith in the preserving properties of tin is so great that I use it in all back teeth below the first quality, and as few teeth of first quality have extensive cavities I use it in all cases where possible. In teeth below this quality I would cauterize with nitrate of silver, at the cervical wall. A lip on the matrix, Fig. 2, is bent backward over the second molar, and is held in place by a wedge, Fig. 1. The rubber dam and clamp are applied together. The lip on the matrix holds the rubber back so that it need be applied to but one tooth. In filling molars, cavities, involving one-third or one-fourth of the grinding surface, I use a strong matrix held in place by a wedge of compressed pine wood knife-shaped, moistened after being placed in position; this wedge expands and forces the matrix against the cavity at the gum, allowing it to fit back against the adjoining teeth thus giving contour to the filling. No. 25, a strong wall of tin. No 26 is built against the matrix. With a fine plugger it can be pressed against the labial and lingual wall of the cavity shaped with a foot-plugger or the instrument here shown, which is lined not only on the end but on the side, and may be called wall-building plugger. The tin wall is brought in large cavities three-fourths of the way to the top of the grinding surface. If this labial or lingual wall is strong enough it is a simple case and is finished by filling the open space, No. 27, up to the level of the tin with a sticky cement, seeing that it adheres to the tin and wall,—covering with one or more large pellets of tin which are forced into the cement. The operation is then completed with gold, No. 28, not avoiding at the start pressing some of it into

the cement against the wall. Should it be a tooth that will be called on to meet much strain with one thin wall this is supported by a pin inserted, Fig. *a, b, c,* into the cement and coming against this thin wall, the wall should be shortened and the pin left long enough to meet occlusion.

Kindly note here that we secure the maximum of adhesion, cohesion and resistance to occluding force.

The method of combination filling allows for the variations and complications that occur in filling. Should a pulp be exposed and capping indicated the tin wall may be built, then strengthened with cement, avoiding the pulp, then a capping may be flowed in and covered with cement, and the operation completed with cement and left for later inspection. Should it be desired to fill



and test a tooth before final root-filling, a wire covered with gutta-percha may extend from the pulp canal to the grinding surface, the cement introduced and, when nearing the completion of filling, the wire may be withdrawn, leaving access to the root for subsequent care. Or we may wish, in a young tooth, to prolong the life of the pulp which we expect finally to remove. We may fill in this way leaving access to the pulp for the changing of dressing, No. 29.

I go into this so fully because it is so frequently necessary to fill teeth into shape to avoid the moving or tipping of other teeth into or almost at times onto them. And here again I call attention to the preservation of the dental arches of man, not merely the idea of the entire arch of the jaws, but to the arch

that each two teeth made, protecting that portion of membrane between them from injury, and also providing nutriton. Extension for prevention, commonly written "ex for pre," is well established. Let us also emphasize "ex for pro." Extension for protection.

Nutrition to the teeth and to the alveolar process by retarding absorption and aiding in the treatment of all disease by preserving tissue, where nature has placed it. Notice this when treating pyorrhoea and see our results when you have that protecting arch than when it has been destroyed by extraction or by ruthless disking.

My work on this paper will be a pleasure if I can feel that I have made this clear, that the shaping of a filling may be part of

a problem of the nutrition of teeth and jaws. I have brought one or two casts that show the growth of the membrane that followed extended filling, for one is more than a contour.

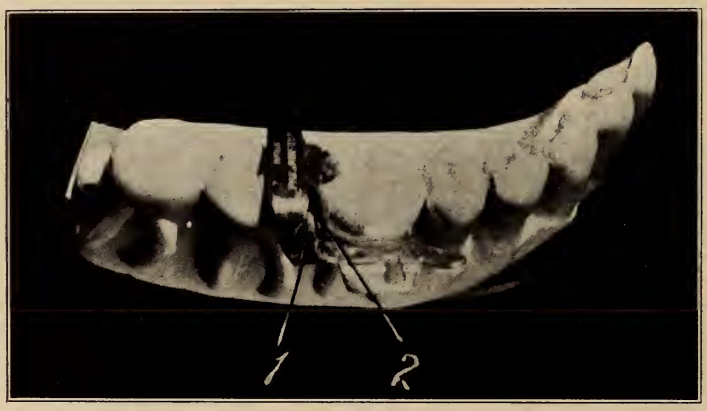
One had a pocket that extended nearly to the end of the root. Now I can hardly enter. Do you believe that this could have been done unless the gum had been protected by the contour of the filling?

Another case marked 31, shows the consequences that follow the ruthless hand of the extractor,—could the gum or the mouth remain healthy? A tooth forced downward and into the process. Youth will bear much I know, but what of later years when pyorrhoea adds to the problem? I show cast, No. 30, taken less than

a week after the operation, and ask you to note the change to the better condition.

We note that pain is relieved in knee and hip by forcing and holding the bones of the foot into natural position. That health comes to patients after organs have assumed their right relations, following the correcting of curvature of spine. Let us not condemn teeth until we have tried at least to restore them to natural shape and condition.

A patient, aged about fifty, asked me once if his lower wisdom tooth was worth caring for. It was gone on the buccal side and had grown loose. On looking at it I saw that it articulated with the two upper molars. He had lost other teeth. I told him that we ought to attempt it. The tooth was banded and restored to



No. 32.

shape with amalgam. Six years after the patient returned from China with the tooth as tight as any tooth in his head; all due to restoration of contour and function.

Before passing this portion of my paper, let me urge the cleansing and cauterizing of all pockets at the sides of the teeth, whether pyorrhoea is present or not, for it is astonishing how much mucous slime, etc., one such pocket can hold and how quickly after cauterization the gum grows firm against the teeth, with a good pink color. The saddest part in practice is the condition of the patients who have cared for their teeth and trusted us and who, as they pass the climacteric, find teeth loosen and move. The process absorbing, time may help us by bringing us knowledge of

nutrition, but until then let us not aid by destroying any arches and making or allowing breeding pockets in the mouths of our patients. I began this paper with a definition of medicine from a famous medical essay by one of the best known writers of the day. With the work of a beloved instructor of years past on the dental arches of man in mind, I quoted from our "good grey poet." Let me quote again and give you, as I take for myself, the adjuration of the seer of Concord:

"Scorn not thou the care of parts,
And the articles of Arts,
Grandeurs of the perfect sphere,
Thank the atoms that cohere."

PYORRHEA—ALVEOLARIS.*

BY HECTOR GRISWOLD, SALT LAKE CITY.

MR. PRESIDENT AND GENTLEMEN:—I did not come to New York for the purpose of appearing before this society, but being in your city, friends of mine here, knowing that I made some effort to specialize by treating pyorrhea, asked if I would not read a short paper on this subject. It was a compliment and I consented to do so. I can't offer you anything new in the treatment of this disease, or advance a new principle whereby the parts can be restored to a healthy condition, or the disease can be prevented. I wish it were possible for me to do so, but I hope I may repeat some of the old ideas in such a manner that all may be encouraged to put forth great efforts to cure this disease, with which a large percentage of all patients over the age of thirty, who have natural teeth, are afflicted.

Too many dentists are skeptical concerning the cure of pyorrhea claiming that it cannot be cured and advising the extraction of the teeth affected. Then, too, they say the treatment is but temporary, and that the same condition will return. It is to these I would speak. They may gain some courage, to at least attempt the treatment of this trouble or send their patients to one who can cure the disease. I will not discuss the misapplication of the term used to designate this disease. We know it means a diseased condition of the socket in which the tooth rests, but pus is not always to be found. I had been in practice but a few years,

* Read before a special afternoon meeting of The New York Institute of Sotmatology, March 6, 1906.

having reached a point when I felt I was doing the ordinary dental operations to preserve the teeth of my patients pretty well, when I realized that I was not saving all teeth; that the teeth in many mouths were attacked by a disease that caused them to loosen and to drop out. To be of the greatest possible service to my patients I determined to at least make an effort to check this disease. I could find little or no help in the text books or journals at that time—this was some fifteen or eighteen years ago—but I went to work at these cases to do the best I could with the crude instruments then on the market. I soon found these instruments would not do, then used excavators and made some instruments for myself. I succeeded beyond anything that I had hoped for, saying to my patients that I could at least help or check the trouble, not assuming that I could cure it. After a few years I found no recurrence of the trouble in many of these cases, and, having had placed in my hands by my friend, Dr. William J. Younger, the man who, in my opinion, knows more about pyorrhea than any man in the world, more suitable instruments for the work, I gained hope and courage particularly as Dr. Younger, after seeing some of my cases, told me I was doing well and was curing the disease. I then said, when I took these cases, I will cure the trouble.

I had been led to believe earlier that it was strictly a constitutional ailment, but my observation, after treating hundreds of cases of pyorrhea for more than fifteen years, with more or less success, is that the disease is largely local and brought about by many causes, *mostly* mechanical. Of these causes I may mention the accumulation of tartar about the lower anterior teeth; injury to gum tissue in ordinary dental operations by the careless operator; the rapid wedging of the teeth; bad fillings, left rough with spaces between the teeth, where food will collect; mechanical substitutes, which irritate the tissues, and all things that will cause irritation at the gum margin, and set up a chronic inflamation which in time extends to the peridental membrane and alveolar process. Impaired articulation of the teeth, caused by irregularity or the early extraction of one or more teeth, is almost certain to produce pyorrhea, as will prolonged bad health, over work, general nervous debility and anything that brings about low vitality and poor circulation, or which causes a lack of nutrition in the parts. It may be hereditary in some cases for we find it runs through families, and it is contagious to some extent. In fact, any and all

wasting diseases that tax the system beyond a certain point, will encourage pyorrhea, but the use of drugs, the Violet Ray, water cures, baths, sea voyages, physical culture, etc., will not cure this disease unless the tartar has first been surgically removed.

Pyorrhea presents itself in mouths at all ages, under all conditions, in all climates and all countries; among all peoples, in narrow faced, and broad faced individuals; those rich and those poor; those who work indoors and those who labor in the fields. It has always been so, since teeth were given to man, and I believe will continue through the coming ages.

The scientific way of relieving this trouble, the way to cure, is surgical entirely. The scientific method—as Dr. Kirk has aptly said, is simply a method of reasoning, a method of observation, a practical way of doing, or getting at things. First observe the trouble. Herein lies the first fault of the general practitioner. He does not find the trouble in its early stage, the insipient symptoms are overlooked, though he sees the patient twice a year, and the patient feels safe. It frequently happens that patients diagnose their own cases, coming to him when they feel the first irritation from gums slightly inflammed, which bleed when the teeth are brushed. The dentist says, after using a little iodine on the gum and perhaps prescribing a mouth wash, "use a softer tooth brush," and he helps the disease along by so doing. Later, the patient returns and the dentist finds the gums much inflammed and calcarious deposits that have formed because the patient has not been able to give the mouth proper care. The dentist finds pyorrhea pockets and many teeth affected with this disease, which no doubt had been present in the mouth of his patient for years and had escaped his eye. He has put in beautiful porcelain and gold fillings and is proud of his work, but he utterly failed to note the early signs of this dreaded disease, a slight granular condition of the gum tissue, the dark red line well above or below the gum margin, a spongy condition of the gums, gums that bleed easily from pressure, or when the tooth brush is used, and when he notices these things he is too apt to say, "Pyorrhea, no help for you, you will loose your teeth in a few years." If the patient continues to visit this dentist, the result is as he has predicted: first, bridges to replace those first lost, then at last, plates.

The dentist should understand, the student should be taught in the colleges, that this trouble can be cured; and if they are

unable to do so, it is their duty to send their patients to one who can save these teeth. His patient will be ever grateful and he will make capital for himself.

I wish to speak of a case in my practice. Some ten years ago I found pyorrhea in the mouth of a little girl eight years old. As far as I know, this is one of the youngest patients on record afflicted by the disease. The baby molars were missing, the bicuspids not due, and the lower sixth year molars, which had erupted early, were affected with pyorrhea, well defined pockets being present on the anterior surface of the anterior roots, with deposits of dark, hard tartar and pus was present. I removed the deposits, treated in the usual way and the results were swift and sure. I cured the disease. I had treated the mouths of both parents for this trouble, and think the little girl had either inherited it or "caught it." This patient visits me at least once a year for the usual dental operations, but there has been no recurrence or new indication of pyorrhea during this period of ten years, and in examining the mouth a couple of months ago, I found a clean, wholesome mouth, the gum tissues in perfect condition, with no signs of the trouble. She is now a pretty girl of eighteen. Was it not fortunate that the trouble was discovered at this early age? If it had not been, the condition of her mouth to-day would be different. When we find the trouble, if we reason at all, we know these deposits must be removed, and the practical way is to get at it with proper instruments. I do not find it necessary, generally speaking, to anesthetize the surrounding parts, as there is but little pain attending the operation, in the hands of a skillful operator. Use the delicate, thin, sharp, highly tempered steel instruments, made by Lukins and Whittington of Philadelphia (from the Younger, Good patterns). They are of many shapes. All should be kept sharp during the operation. I select first a tooth with a deep pocket, where the greatest destruction of tissue has taken place, in order to get the patient under control, as one can operate about such teeth with less pain to the patient. The operation becomes more painful where the disease has not progressed far, where there is less inflammation, as the instruments come in contact with healthy tissue. The local anesthetics can sometimes be used about such teeth to an advantage. Remove all deposits of tartar above the gum margins. These deposits are more apt to be found about the necks of the teeth after the disease is of long standing,

and the teeth have become sore, when, in consequence of imperfect mastication, these deposits form and become an additional cause of inflammation to the mucous membrane—forcing the gum tissue back and aiding largely in causing the teeth to loosen. In removing the pyorrhea deposit from the roots, take one tooth at a time and keep at it until all tartar is removed, and the surfaces smooth, even if it takes one, two or three hours to finish with one tooth. Here is the opportunity for thorough work. Care must be taken to calculate accurately the shape and location of the roots; find the deposits and remove them, for the cure of the disease depends upon the thoroughness with which this important work is done. The instruments are fine and delicate with long handles which should be mounted with little knobs of sealing wax, as I use them, aiding greatly the sense of touch. By long and continued practice a "finger culture" is acquired—a delicate sense of touch by which one can detect the smallest deposits upon the roots. It does not matter whether one uses a pushing or a pulling movement in removing these deposits; it is simply a question of removing them. Generally the flow of blood during the operation is sufficient to take the loosened particles of tartar out into the mouth, to be rinsed out by the patient. I avoid during the operation the use of all caustics, escharotics and powerful anteseptics, because I want a free hemmorrhage from the congested tissues involved. This inflammation is not confined to the peridental membrane, but extends through the alveolar process, including the periosteum and mucous membrane. To relieve this condition, I not only puncture the gum between the teeth, avoiding the cutting of the gum margin, but I puncture the mucous membrane near the apex of the root, and where the pocket is deep and extends to the apex. I pass a small lance through the thin alveolar plate at this point, and if I think it advisable, frequently operate on the root through this opening. Once satisfied that I have removed all deposits, and having literally stripped the root of its diseased membrane and have removed all diseased surrounding parts involved, I pass to the next tooth. In my own practice I limit these operations for each patient to one hour. I now see that the mucous membrane is protected by vaseline, place cotton rolls about the teeth, and flood the pockets with warm chemically pure lactic acid, using a long flexible and blunt steel needle (Dr. Good's pyorrhea needle). Care should be taken not

to force the acid into the pocket to avoid producing pain by pressure, but gently flood the pocket until the acid comes back to the surface. Now give the parts absolute rest and a chance to heal; do not touch these teeth again. There are certain conditions governing the healing of tissue that must not be disregarded. One is apt to overtreat, and thus overdo his work. These parts need rest, and the teeth should be relieved from all strain. All loose teeth should be held firmly by bands or wire ligatures, not silk; the latter is liable to be too active. I use a fine copper wire which has served me best; though, with care and judgment, the fine silk ligature can often be used to advantage. I now prescribe a mouth bath of hydronapthal and tincture of calindulae.

Hydronapthal, 2 drachms.
Tincture calindulae, ½ ounce.
Aq-dest-qs, 8 ounces.
M

This is a powerful astringent and antiseptic, to be used two or three times daily, holding it in the mouth five minutes at a time, forcing it backwards and forwards around the gum and between the teeth, instructing the patient to follow this by a thorough massaging of the gums, and demonstrating to them how to do it. The soreness resulting from the surgical work will pass away in a few hours by the faithful use of this mouth bath. In two or three weeks the case will be entirely healed, if no deposits have been left. The disease has been eradicated, perhaps, in some cases, without a knowledge of the exact cause. I know of no operation in dentistry that gives such immediate relief and one in which the patient becomes so much interested. They will frequently say while I am operating, "Do you know, I have felt as if I wanted to do that very thing myself." They, too, are interested in finding these deposits; they quickly detect the roughened surface as the instrument comes in contact with it, and later will say, "Doctor, that feels smooth now." The disagreeable taste in the mouth resulting from the offensive discharge of these pockets, so apparent upon arising in the morning, will disappear, as will the sickening foul breath. When the patient is dismissed I ask him to return in a month, and have him call at intervals after this, so that I can examine the mouth and look for any slight irritation which would result, if any deposits have been left, and also to keep up the interest of the patient in the care of their teeth. Now,

much depends upon the faithfulness with which the patient carries out instructions as to the care of the mouth.

Following the operation patients are apt to complain that the teeth are sensitive to thermal changes. This condition will soon pass away. But in case certain teeth are *excessively* sensitive to thermal changes, action of acids, and to touch, it is sometimes necessary to destroy one or more pulps for the patient's comfort.

Gentlemen, pyorrhea causes more disorder in the human being than any of us are aware of. Stomach troubles, headaches, and extreme nervousness often disappear when this disease is gotten rid of, and more teeth are lost from the results of pyorrhea than from all other causes combined. My most obstinate cases have been almost invariably persons of robust health, in whom apparently all of the predisposing constitutional affections were wanting, whose teeth gave little trouble from caries, every indication pointing to a good structural development.

A typical illustration of this class, a patient whose mouth I operated on just prior to my leaving home: An army officer, thirty-eight years of age, a man of good digestion, regular habits, who had never been ill, and who had led an outdoor life. He was physically a fine specimen of manhood, no rheumatic tendency, nor had any of his family ever been, to his knowledge, affected by rheumatism, syphilis or scrofula. The arches were well developed; he had perfect dentures, and the teeth were regular, the articulation correct. He presented himself with his face badly swollen, the result of an abscessed condition of a lower wisdom tooth, caused by pyorrhea. This tooth I removed. I found all the other teeth reeking in this disease. He said the condition had not attracted his attention until six months before, when, returning from the Philippines, this same tooth gave him trouble and the dentist he consulted lanced the gum at this point, dismissed him, but telling him nothing of the pyorrhea condition existing in the mouth. There were no accumulations of tartar, the gums had not receded, the teeth had not moved out of their proper position, but upon passing an instrument under the free margin of the gum a pocket would be reached *from which pus would flow.* The condition had become very embarrassing, on account of the odor arising from this discharge, he thinking that he was suffering from some exaggerated stomach trouble.

The surgical work that I did in this man's mouth was per-

haps more extensive than I had ever done for a patient before. The condition, as I have said, was general throughout the mouth, all teeth being affected. with the exception, strange to say, of one tooth; the right superior central was not affected in any way. This case responded most beautifully to the treatment and a more grateful patient I never had the pleasure of working for. He felt that I had performed a miracle. But I am yet undecided as to the cause in his case. Was it brought about by the long sea voyage and perhaps living on a diet largely of salt meats, or what? This is not the first case that I have had of patients acquiring this trouble, apparently from long sea voyages. There are operations to be performed frequently in the treatment of pyorrhea besides the mere scaling of the roots; amputation of roots that have become absorbed; amputation of the palatal roots of the upper molars left entirely out of the socket, the surrounding parts having left them through the progress of the disease. Replanting one or more of the anterior teeth, where they have become elongated, and little or no root remains in the socket, is sometimes necessary. These I remove, deepen the socket and replant. I have patients in whose mouths I have operated for the cure of pyorrhea, who still have their teeth after twelve to fifteen years, and I do not find a recurrence of these deposits. A dentist succeeds in curing pyorrhea by this means, just as surely as the surgeon succeeds in curing some diseases by operations.

If you, as dentists, would cultivate the delicate sense of touch necessary to successfully remove these deposits and think less of the causes of this disease, you would get along much faster in curing the trouble and would make very grateful patients, who are to-day suffering from pyorrhea and dreading the time when they must loose their teeth.

If I have given you anything in this paper that will be of service, or if I have increased your courage in undertaking the treatment of this disease, I shall be very grateful. I speak only from such knowledge as I have obtained in my long practice in handling this disease. I thank you.

The New York Institute of Stomatology.

A meeting of the Institute was held at the Chelsea, No. 222 West 23rd street, New York, Tuesday evening, March 6th, 1906, the President, Dr. S. E. Davenport, in the chair.

The minutes of the last meeting were read and approved.

Under the head of communication on Theory and Practice, Dr. J. Morgan Howe presented some casts representing restorations of certain teeth by means of gold tips.

Dr. J. Morgan Howe. The principal point to which I wish to draw attention is the security of anchorage to be obtained by pins going into the tooth and holding gold tips made to accurately fit the surface. The process has been previously described so I will not go into that. These casts represent a case where there was no occlusion posteriorly to the first bicuspid. Although the patient had molars, there was no occlusion and he was unable to chew except with his front teeth. As a result, the incisors had been greatly worn, and although they had been reinforced several times with fillings of gold, this had worn out and had frequently to be renewed. He consulted me as to what could be done to enable him to chew better. The plan that I adopted was to shape pure gold over the tops of the lower molars, and building this up with clasp gold with pins running into the solid enamel and dentine of the teeth. The work was done in October, 1902, and happening to see the patient recently I found those gold cusps standing perfectly and doing good service.

Dr. F. L. Fossume. I have made many restorations as described by Dr. Howe, and often used them for anchorage in bridge work, and I only wish to call your attention to the importance of thoroughly sterilizing and cauterizing the surface of the tooth under the cap or tip. A saturated solution of formaline for sterilizing and silver nitrate for cauterizing I believe to be the most efficient.

The President. How does Dr. Howe produce the holes in the tooth in a parallel line?

Dr. Howe. I drill one hole in the direction desired and place in it a piece of straight wire as long as the location will permit,

then, using this as a guide, I drill the other holes as nearly parallel as possible to that wire.. I have never experienced any difficulty in making them nearly enough parallel for practical purposes. In molars I generally drill four holes.

The President. One of our honorary members is our essayist to-night. He is to speak to us on "The Rise and Fall of National Dental Organizations." Probably there is no one better fitted to talk upon this subject. I take great pleasure in introducing Dr. James Truman, of Philadelphia.

(For Dr. Truman's paper, see page 87.)

The President. The discussion of Dr. Truman's paper is now in order.

Dr. Potter, Boston.—My knowledge of National Dental Organizations has been gained for the most part by attendance upon the last meeting of the National Dental Association at Buffalo, and from an attendance upon the meeting of the same association held at Asheville, N. C., two years previous to the Buffalo meeting.

From these two meetings certain convictions have been forced upon me, and I will briefly state them.

First. No person connected in any way with a dental supply house should be allowed membership in a national dental organization. The spirit of commercialism is very much in evidence in these meetings, and will never cease to be a controlling force so long as persons employed by supply houses are admitted as members to the National Association.

Second. I believe that a National Dental Organization should be formed on either one or two plans.

(a). It should be a very large body admitting to membership all who belong to societies whose code of ethics is approved by the National Society. Its membership should not be limited to state societies. It should have a strict code of ethics and punish or expel members violating it.

At the meetings of the National Organization papers of scientific interest should be presented and clinics given. These meetings would be similar to those of a local society, only on a larger scale.

(b). If not a large organization, then I would have it a very small organization, composed of one or more delegates from each of the societies approved of by the National Society. I would

have this small society devote itself to discussions which would help form the policies of the local societies.

For instance, it could consider the following questions: How can Independent Journalism be put upon a firm foundation? How can dental surgeons receive proper rank in the army and navy? How can the profession be protected from the exaction of patent claims?

Questions of this sort would be discussed rather than those allied to professional work or investigation. No clinics or exhibits would be held.

On the whole, I am inclined to favor a National Association modeled after class B. I do not believe that we so much need an enlarged local society as we do a small, representative, deliberative body which shall discuss principles, mark out desirable lines of procedure and lead the local societies along ethical ways.

Dr. B. Holly Smith, of Baltimore. The paper was a very interesting one, as all that Dr. Truman reads are. I think there are perhaps some here who were present when the lid was put down on all that remained of the American Dental Association. If so you heard the remarks that our distinguished essayist made then, his misgivings and forebodings as to the future. They chilled me then quite as much as his present remarks shock me now. I am quite aware that the National Association is not all that it should be, but as a member of the National Association I will say that I feel that I have some small right to speak for it, and I hope you will bear with me if I recite a little history. When I was president of the Southern Dental Association I read a paper in which I recommended that the American Dental Association and the Southern Dental Association be united; that in this country where dentistry had its birth there should be one national society, and that in such matters there should be no North and no South. Dr. Fillebrown said to me that he thought the time was ripe for such a union, and after some discussion before the American Association two committees were appointed, one from the American Association and one from the Southern Society for the purpose of forming plans for the union of the two societies. I don't know whether any of you gentlemen remember what discussions, dissensions and objections arose, but I do know that I traveled to nearly every State in the South for the purpose of breaking down the barriers to this formation of a National Society. Finally this was accom-

plished and there was formed what has since been known as the National Dental Association. I am not here to say that it is all that it ought to be. It never will be so until every man in this room has given to it his loyal support. I make no apology for my love of the National Association and my deep interest in its future. I say to you that the National Association has a right to the esteem and protection of the members of this Institute. Four here out of twenty-two active members are members of the National Association, and sixty-two of your associate members are also members of the National body. New York State has as large a membership as any other State. You gentlemen control one-tenth of all the membership of the National Association. Have you any interest in the National Association? Your essayist says that this organization is doomed. Can I persuade you that it is of great importance that we have a national organization? We need one national organization to represent dental authority in this country. When a demand comes from an allied profession or from the government, how can it better be considered than through a National Association? It is not probable that such an organization will be perfect, but it is imperfect largely because you and I have not tried to make it better.

The gentleman has spoken about politics. It is said that where two or three Americans are gathered together there are four or five politicians among them. I recently asked one of the faculty of a prominent university if they have any politics in other scientific organizations. He said, "Yes; I have never belonged to an organization yet where they did not have politics." I do not defend the politics of the National Association. I know great errors have been made. One of the greatest was the exclusion of your organization by the resolutions passed at Buffalo. This mistake will be rectified at the next meeting I have no doubt. I shall always believe that it is best to trust people to do things until you find that they have done wrong, and then try and help them to do right. From the high position that our distinguished essayist has taken, looking down on the National Dental Association with all its frailties (to use a figure of William Allen White). I am wondering if it has ever occurred to him how sorry God must be when he looks down on the human race and sees all its frailties? But does he point them to the executioner? With infinite tenderness he points with an awkened conscience and a rising hope to

a resolute determination to do better. When the doors of the National Dental Association shall have been closed forever, with its clinics, discussions, demonstrations and papers, a memory only, and I have seen file out of its halls the long line of distinguished men who comprise its permanent membership and represent the brains and achievement of American dentistry to-day, then my voice shall be hushed, but not till then. To-day I raise my voice in defense of the only authoritative organization in this country, the National Dental Association. I raise my voice in pleading to you to come to the support and defense of that organization; I ask you to put into it your life and strength, toward its up-building and restoration to the place it should occupy in the dental profession and the world at large.

Dr. E. C. Briggs.—There is no doubt that we should draw valuable lessons from the failure of dental organizations in organizing any new ones. That Dr. Truman has put his finger on the salient points deserving condemnation and pointed out a good path to follow for the future, I think we will all agree. That he has done so, clearly and forcibly, goes without saying.

Dr. Truman, however, says some things in his paper which call for elucidation on his part, unless he would have some of us rise to protest, and perhaps forget the good he would do, in protesting against the wrong he is doing.

For instance, the writer has been a member of the American Medical Association for more than a score of years; and while, in the section of Stomatology, there may have been some extremists, as there are everywhere, he has never known that the Section stood for the relegation of prosthetic dentistry to specialists, or for making "the college course to consist of purely medical subjects."

There is no doubt we have struggled to obtain the removal of the stigma attached to it, but never by the abolition of any of the technical training of the dentist or curtailment of the mental training along his special lines.

As well say that the orthopedic surgeon destroys his prestige by giving so much of his time to the construction of boots, and in writing long articles for the medical journals devoted solely to foot-wear, as to attribute the lack of prestige of the dentist, orist, stomatologist, or whatever you may call him, to the fact that he supplies his patients with artificial aids to the most important single function of the body.

No; we have injured ourselves and are killing ourselves by other means, one of which the writer of the essay this evening has pointed out, in that we have had our Society organizations too often the hot-beds of cheap political strife and made the requirements for membership anything but erudition and cultivation.

The mere fact that politics play a part in dental societies does not strike the writer as so serious a matter. Politics get into everything where there are offices to be held, and the political mind is not incompatible with an educated and a cultivated mind. Many of our best men like offices, and, because they do like them, they are much more likely to do good work in them than the more retiring ones. Executive force will assert itself and it will demand consciously or unconsciously the opportunity for expression.

But, and here lies the trouble, the rank and file of the profession either cannot, or will not, see the difference between the man of ability and cultivation, who is glad to find opportunity for the exercise of his executive abilities, and the "smart Alec" seeking notoriety and advertising.

And how may we clear the vision of the voter that he may select the men who can organize and perfect an association which will stand for something to the profession and to the world outside. Here we have been at it since 1840, and got nowhere. It would seem not to have been so very bad a mistake to have followed even closer to the lines of the American Medical Association which Dr. Truman so curtly disposes of.

To repeat, how clear the vision of the voter or delegate? Well, one way is not to tell him that, because he has become proficient in one or two practical, technical points, he knows it all. Instead, force upon his consciousness that unless he makes himself a man of broad understanding and cultivation, he is a nonentity in the make-up of the true profession. A few years may see the particular technical point in which he is so proficient, obsolete, and he himself may be added to the number already a drag on the profession.

The profession is hurt by the attitude of some who might be called self-made men, i. e., men who did not have the advantages of training and education possessed by the student of to-day, who, because of mighty brains and persistent work, have made themselves institutes of learning. These men pound their chests and say, "Look at me. I never had any of this long, semi-collegiate,

semi-medical school work which half ignores practical training." They forget that all their real development has been along those lines by virtue of their own work with their brains, that their technique has developed in much less a ratio. And their hearers, many of whom will never rise one notch above the level where their degree places them, forget, too, what the man has done with and for himself, and immediately feel that, after all, classical education does not mean so much. And thus begins the lowering of their tone and that of the men they demand for leaders and so a loss of prestige in the eyes of the layman.

There are many finely educated men among the osteopaths, but have the osteopaths any standing? No; and why? Because they have exalted the technique and not the education which has made the technique a means of help to patients.

Techniques fail or change but the broad fundamental principles, which are absorbed and elaborated by the brain and not by the hands, never change, and until we reorganize and act upon this truth, we cannot expect to found good and stable societies. They will have no standing nor prestige, but be like boys' clubs, an imitation of what we might do when we grow up.

While feeling that national organizations should not be too exclusive, the writer most heartily endorses Dr. Truman's contentions that members should be drawn from local societies of good standing, and that such societies should have as a prerequisite of membership to their bodies some such qualifying test as suggested by Dr. Truman.

The strictures upon State societies as drawn by Dr. Truman seem to the writer entirely just.

Dr. E. A. Bogue. I was a member of the American Dental Association from the time it was organized until the day of its absorption by the National Association. When the American Dental Association became merged into the National it was with a sincere desire, as Dr. Holly Smith has so forcibly said, to bring into harmony the different factions at that time. From that moment it went on to do its work until the defect in its laws became so apparent that our good friend Dr. Black tried to reorganize it. In this reorganization he planned the government of the society by a small body. It was just such a government as we have in this society. It was not to be supposed that the main body could be desirous of looking after these details and the result

was that the 620 members of the association were represented by seven men. The whole society was placed, so to speak, in the hands of these seven men and it has unfortunately happened, I think I speak correctly, that these seven men have sometimes been governed by the dental depots. I agree with Dr. Holly Smith that it is most unfortunate that the National Association has decided to reject all delegates save those from the State societies. As the matter stands now I am really in doubt which course to pursue, whether to resign from the National Association and induce all the friends I can to resign, in order to form another society, or whether it would be best to remain in the society and try and regenerate it. The difficulty of doing this latter is very great indeed. The last amendment to its by-laws almost disqualifies it. See what they did with the *International Dental Journal,* the only independent dental journal in this country. It was offered them gratuitously, without debt and with a list of subscribers and advertisements that would practically run it, the only condition being that they would run it and publish in it their proceedings. A committee was appointed to consider the question and before that committee had time to report, somehow or other the question came up in the Council as to where the proceedings should be published and they were then and there given to the S. S. White Company, making it impossible for the committee to accept the International. The fact remains that on account of a little personal quarrel which some of the members of the national body had at Washington, what about I do not know, they shut out the delegateship from all the societies save the State societies, thereby shutting off so much pecuniary assistance that they were said to be unable to publish their own proceedings without elimination and as they wanted them published; thus, for a time at least, destroying the hope of a really independent dental journal and a really independent national society.

Dr. Louis Jack.—The indications are that the National Dental Association in the declining state of its usefulness as a body representative of American dentistry has, by its action at the recent Buffalo meeting in ignoring the local societies and declining to receive delegates from them, thereby greatly deprived itself of support and of respectful consideration. It has taken a serious step, inevitably leading to its dissolution. Any definite action towards the organization of an Association to better fulfill the de-

mands of the general sentiment of the profession may be out of place at the present time, but it certainly is not inappropriate to consider methods and devise plans better adapted to meet the needs of the general body with reference either to a reorganization of the National Association or the formation of a new Association constituted to give greater satisfaction and to promote a higher degree of effort.

My own views, while in some degrees in accord with Dr. Truman's as to the character, mental qualities and scientific attainments of the representatives sent up from the local societies to the National Association or American Association of Dental Surgeons, if this be a better designation. To Dr. Truman's limitation of the period of their membership as representatives to the general body, it appears to my mind to be an unnecessary requirement, providing the business of the Association be deputed to a council with full power for the conduct of the small amount of business that is essential for the government of any such an Association. This eliminates the indulgence of political intrigue and management. As to the two principal officers, the general body should nominate three or more candidates for the suffrage of the Council.

The number of men of scholarly attainments and of scientific qualifications are so few in comparison with the mass who are impressed by their writings, and have to be guided by the results of careful expert investigations that an Association composed only of these would, for want of numerical strength, necessarily lack efficiency. It may here be the place to state that no society of the kind desired can command esteem or long exist unless its scientific procedures are published under the auspices of the body. They then go out in concrete form to the constituents of the general profession with satisfaction. In this way the results of careful thought and definite investigation become standards for guidance and lead to the establishment of correct general methods of practice. In this view of the case an Association requires a sufficiency of membership to give stimulation and to supply the required funds to support the necessary expense.

With some modifications adapted to the present state of the dental profession, permit me to suggest the form of organization of the *American Association* for the *Advancement of Science.*

The effective members of this Association are permanent, as

all should be so long as they maintain a real interest in science, or possess efficiency in promoting scientific work.

This Association is composed of three classes of persons—fellows, members and associates. "Fellows" are elected by the Council from such of the members as are professionally engaged in science, or have by their labors aided in the advance of science. The election of *fellows* shall be by ballot and a majority vote of the Council at a designated meeting of the Council.

Members—"Any person may become a member of the Association upon a recommendation in writing by two members or fellows, and election by the Council."

"Associates for any single meeting shall be admitted on the payment of the annual dues, such associates have all the privileges of the meeting except reading papers and voting." As to a Dental Association, I would also except discussion. Concerning representation from state or local societies, there ought to be qualification of fitness. The representatives received from these societies should be of those who may have written papers of permanent quality, or have made investigation of scientific value. This should be stated on their certificate. These could become, by the provided method, *fellows* or *members* of the Association; any others representing these local societies would be associates for the designated meeting.

An Association similarly composed, with the business of the meeting conducted by a Council or General Committee, would eliminate the distracting and disturbing elements of the usual meetings of Dental Associations.

As to the Annual Meeting of any National Association, they should decidedly and definitely discourage and prevent the exhibition of appliances, medicaments, etc., from the neighborhood of the place of meeting. Let these matters, and also the Clinics, be relegated to the State and local Society gatherings.

The American Association for the Advancement of Science commenced in 1848 with 461 members. It has steadily increased in membership, power and influence with the development of science in the world, until now it has 4,175 members. Of these, 1,344 are fellows and 2,963 ordinary members. As stated before, fellows "are those who are engaged in the pursuit of science or have, by their labors, aided in the advance of science." The indications are that the general members have so much interest in the

work and in the published proceedings of this Association to maintain their membership, whether they attend the meetings or not, they have the ties and the interest developed by their connection with a Society which promotes the good of all and unites them with it most closely, through the annual publication of the proceedings.

As human nature is the same in its higher manifestations, there is no ground for apprehension that one general body could and would evolve a permanent association if the tendency to personal manipulation be eliminated.

It should have been stated above that a material reorganization of the dental profession on rational lines would in all probability bring back those who have composed the section of stomatology of the American Medical Association. This return would make available the results of the study by the members of said section. At present their work is published and carried on with the proceedings of the Medical Association, where it is virtually out of reach of the dental public.

Dr. C. T. Stockwell.—I thank you for sending me a copy of Dr. Truman's paper. I have read it with great interest, but have not had time to digest its contents sufficiently to warrant extended remarks. I was at first almost startled by the title of the paper. But a moment's thought showed me that it was a *live* subject, affording material in abundance for, in fact, a number of papers.

And so I began to read. And as I read my interest deepened. Now, as I lay the paper down, I may say, in general, that Dr. Truman has won my full sympathy. The spirit of it is admirable. The purpose he has in view is the highest interest of the profession, and who of us will undertake to maintain that the highest good of our profession can be advanced, in harmony with the prevailing sentiment of the age, upon any other ground than that of a disinterested personal devotion to the spirit of scientific progress.

This, it seems to me, should be the sole end and purpose of the national organization. It has no other legitimate function. As intimated by Dr. Truman, there is enough of politics and of legislative concern in our State societies. There exists, however, more reason for it in the State societies. There is, temporarily at least, a greater need for legislative action in the individual States. The present status of the profession, legal and otherwise, throughout the country, seems to render this a necessity. And so it is

important, so it seems to many good men at least, to make the membership of the State societies as large and democratic as possible. In order to do this successfully, the profession at large being what it is to-day, too much emphasis cannot be placed upon the purely scientific side. Were this to be done I am afraid the membership of these societies would soon be reduced so that they would cease to be effective as a legislative force.

The conditions are quite different in the National Society. Here, I am convinced, the sole, or almost sole, purpose and aim should be along purely scientific lines. It goes without saying that there is no place in such a society for political cliques. In fact, they should be ruled out of any society whatever.

I cannot discuss at the present time Dr. Truman's plan for the formation of a new national organization; certainly not in detail. The general plan wins my entire sympathy; and for the reasons stated it seems to me that the State societies should not be given representation as such. Local societies would be far more apt to furnish the proper material for a working society along purely scientific lines.

Dr. H. L. Wheeler. May I be permitted to ask Dr. B. Holly Smith a question or two? Can he tell me just how the proceedings of the National Association were given to the S. S. White Company? Was it before the Executive Council had knowledge of the offer of the International?

Dr. B. Holly Smith. I made the motion that the proceedings be given to the S. S. White Company because they offered to do the work for less money and at better advantage to the Association. When I made the motion I did not think of the offer of the International. I regarded the International as being somewhat of a burden and was not prepared to say what we would be able to do with it. My motion was carried.

Dr. Wheeler. I am heartily in sympathy with the importance of a national body but the National Association has arrived at a point where, unless it is radically changed, it is unworthy of the confidence of any self-respecting man. Dr. B. Holly Smith himself was dropped from the list of the Executive Committee because of the anger of a man in the control of a commercial house who could not control him. This I believe to be true and I think Dr. Smith will agree with me.

Dr. B. Holly Smith. The understanding always has been that

the Council shall consist of five elected members, two members from each section away from the section where the President resides and only one from the location of the President. Dr. Crawford being near the seat of the meeting and being a more useful man, my name was dropped, and I am sure from no other motive whatever.

Dr. Wheeler. Nevertheless the general impression is quite the contrary. There were placed on the Executive Council two men from the West whose experience in National Association matters was quite limited. I tried to get an amendment before the National Association, making it possible to take over the *International Dental Journal.* I succeeded in getting it signed by five members and was told that it could not be published because it had not been placed before the Executive Council previously, and yet when Dr. Finley appeared with an amendment somewhat later than this—a most gross and unjust amendment that will weaken the Association more than anything that has occurred to it in years—his amendment was readily accepted and published as though it had been received in legitimate form. If things continue in this way, I for one intend to resign and have nothing more to do with the body.

The paper was a very interesting and useful one, but I should have been more radical even than Dr. Truman and I do not agree entirely with his classification. I believe in England, where they have one-eighth the number of dentists that they have here, they have eight times as many ethical members. The trouble goes back to the personal integrity of the individuals who make up our association. Unless a man has an unselfish devotion to the profession he will go to the National Association for what he can get out of it. That is what is the matter with the National Association to-day. How can we accomplish the building up of the character of the younger men when we admit to membership men whose devotion is not to the profession but to what they can get out of it? How can a man serve the dental profession and a commercial house at the same time? What is the influence of a man who publishes to the world that there is no difference between the ethics of a profession and the ethics of business? Can such a man be one of high integrity and unselfish devotion to the profession? In a commercial business it is proper and legitimate for me to sell a

man all that I can persuade him to buy. Can we ethically adopt the same principle in our dealings with our patients?

Dr. C. O. Kimball. I care to say but little because Dr. Wheeler, with full knowledge of the affair, has spoken so clearly. When we were appointed on the last day of the Association it was then understood that the proceedings for the next year had been given to the S. S. White Company. We knew also that the ground had been cut from under us by the fact that our society had no longer any representation in the Association. In spite of that we met at the first moment we could after reaching the city and would have arranged to do it sooner had there been any hope that we could carry on the International for the coming year. We knew we could not do that without any material from the National Association, but we hoped still that the International could be pursuaded to keep in existence for another year under its old management. This is the reason why immediate action was not taken. The committee then decided to postpone further discussion until our experiment in journalism had been tried for one or two quarters. In the early summer we shall consider the matter again and see what report we shall make to the National Association.

Dr. Truman. I regret that the discussion has taken the course it has. It seems to me that it has missed the main point that I was anxious to bring out, and that was, "What can we do to improve the National organization?" And in addition to this, Why have the older organizations died? These points have scarcely been touched upon and the discussion has drifted into what took place at Buffalo in connection with the *International Dental Journal.* I was interested in the *International Dental Journal,* due in part to my long connection with it and the principle it has represented. I am always pleased to listen to Dr. Holly Smith. He strikes a chord in my inner life that is pleasant and one to which I respond, but I cannot understand how he can say that he knew nothing of the offer that the International Dental Publication Company made to the National body. I was appointed chairman of the committee that was to take charge of the journal question. Dr. Noel, President of the Ashville meeting, appointed that committee. We could not report in 1904 because there was no meeting of The National Association. The committee at Buffalo made a full written statement. This was read in open meeting of the National

Dental Association and sent to the Council for consideration. It offered the *International Dental Journal* to the Association without reserve. At that time Dr. Eugene Smith, of Boston, offered $100 and another gentleman made a similar offer to establish a fund to meet any deficit that might possibly arise. This was not however necessary for the International had always been self-supporting and would probably continue to do as well or better. All that was necessary was to continue it upon the plan found to give the best results. The Council considered the matter that evening carefully. They referred the question to the main body at the general meeting the next morning. The matter was brought up there and the decision was to accept the *Journal.* After this had been agreed upon and the committee had been appointed and I had returned home with the full expectation that the International would be taken on by the National body, I found that the Council had reconsidered the whole matter and given the proceedings to the S. S. White Company.

I am not here to air my own grievances. I want to see the dental profession in this country organized on a scientific basis, and I further want to see a National organization that we can respect. I cannot feel respect for the National body as it is at present organized, and I therefore want something better. I do not like to have it said that the dental profession in Great Britain is organized upon a higher standard than it is in America. I do not like the statement that the Cosmos made in the last issue, that the ethics of the profession are the same as the ethics of trade. I do not regard this as correct. I believe that the ethics of the profession, while similar in kind, are, or at least should be, better than the ethics of trade. While the latter may stand for honest dealing, the accumulation of wealth is the end and aim of all its efforts.

If my friend Dr. Smith is willing to sustain the National organization as it is at present organized, then I fear he has degenerated, but I prefer to think he has not understood the matter.

I do not like to go over these Buffalo matters, but as they have been brought up I want to define my position. I have but little faith in the National Association, organized as it is. We need a National body more in accord with the spirit of the twentieth century, and to accomplish this the permanent membership common

to all these associations must be eliminated from the constitutions of the future.

Upon motion, a rising vote of thanks was extended to Dr. Truman for his interesting and valuable paper.

Adjourned.

At a special afternoon meeting of The New York Institute of Stomatology Dr. George C. Ainsworth, of Boston, gave a practical demonstration of his method of making the appliance, which bears his name, for the cases requiring its use.

From tubing of various sizes he selects the one that fits the case in hand and cuts off bands of the proper width; these are fitted and the masticating edge of the band is bent over a little so that it rests on the tooth and prevents the band from working up.

A plaster impression is taken with the bands in position and the model poured. The palatal wires are bent to fit on the model. If it is necessary to spread the cuspids the front end of the palatal wire is bent at a right angle and filed to a point and the wire is so placed that this point will reach the neck of the tooth.

The palatal wires when fitted are held in the proper position on the model with binding wire and soldered to the bands.

The small tubing which is to hold the arch is soldered to the bands on the buccal side.

The arch is usually made at the chair after the rest of the appliance has been placed in position. An illustration of the "Ainsworth appliance" appears in the report of the April meeting of the Institute.

The New York Institute of Stomatology.

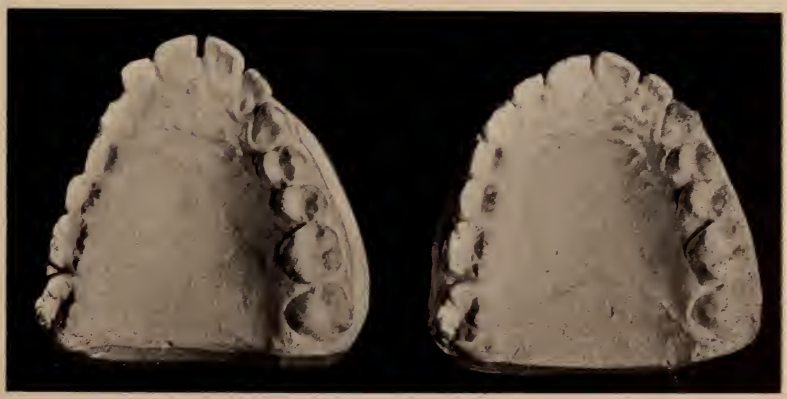
The regular meeting of the Institute was held at the Chelsea, No. 222 West 23rd Street, New York, Tuesday evening, April 3rd, 1906, the President, Dr. S. E. Davenport, in the chair.

The minutes of the last regular meeting were read and approved.

Communications on Theory and Practice.

Dr. A. H. Brockway presented a cast showing a malposition of the teeth and asked for suggestions as to the best way of correcting the same.

Dr. George C. Ainsworth presented casts of a case of irregularity, illustrating simplicity of method and results following very few visits from the patient.



Dr. George C. Ainsworth.

The automatic spreading appliance was adjusted to this case (patient 12 years old) on November 21st, 1905, and the impression taken from which the second model was made, February 8, 1906. I saw the patient only once (December 28th, 1905), between those dates, but made no change in the appliance.

Two weeks after the appliance was put on, the parents wrote me: "The teeth were a trifle tender for a day or two, but since then have given no trouble. It was only yesterday she remarked, 'I should never know I had an appliance on.' We are very much pleased to have her feel so comfortable."

The President.—For many years the construction of artificial dentures and the regulation of teeth was carried on in a "hit or miss" fashion, depending upon the taste, good or bad, of the dentist in charge. Finally a few men began to give more attention to the study of the teeth and jaws and to endeavor to determine their relative size and proper position. Dr. I. B. Davenport, of Paris, read a notable paper on this subject before the New York Odontological Society twenty years ago, and Dr. Bonwill gave his articulator to the profession, revolutionizing the making of artificial dentures. Still, the regulation of the teeth was without scientific supervision until, quite recently, several gentlemen have concentrated their powers upon the measurement of the teeth themselves, ascertaining that by a careful measurement of a few teeth, the size of the coming adult jaw could be pretty closely determined. Our essayist of the evening has been almost alone in this field, and at the International Dental Congress at St. Louis two years ago he read a paper upon the subject which attracted wide attention all over the world. I take great pleasure in introducing Dr. C. A. Hawley, of Columbus, Ohio, who will address us upon the subject: "An Accurate Method in Orthodontia."
(For Dr. Hawley's paper see page 000).

Dr. J. Lowe Young.—I consider that Dr. Hawley's paper one of the most useful along this line we have ever had and am sure we will recognize the great amount of work Dr. Hawley has put upon this subject. I agreed to furnish some data for him, but when I promised to do so I had no idea how much time it would take and what minute details Dr. Hawley required.

For two years I have been using the scheme advanced by Dr. Hawley in his first paper for determining the width of the arch,

and I find it a most valuable basis for diagnosis. Although I have experienced some difficulty where the cuspids and lateral incisors are not through the gum, but on an average the method is a very safe guide. It is often said that it is impossible to decide at the outset what course we will need to pursue all the way through a case of regulating, but I believe that in using this method in forming our diagnosis we will not only have a correct idea of what we are going to do, but we will also know how to retain the teeth afterwards. I am in the habit of making my retaining bands before any regulating is done, when the teeth are not sore, putting them away for the time that I shall be ready for them.

Dr. R. Ottolengui.—This is the second time that I have been called upon to discuss this subject, the first time being when Dr. Hawley read his first paper at St. Louis. When I heard that paper I prophesied that Dr. Hawley's name would stand in the same relation to orthodontia as Dr. Bonwill's does relative to prosthodontia work. I think Dr. Hawley has proven that there is something of more than academic value in his theory. It is not always so very difficult to align two sets of teeth, but it has been my experience and that of some others who have worked along these lines, starting without any definite arch in view, that after getting a fair alignment in both arches we find that there is a bad occlusion and that the correction of the occlusion is difficult, possibly because of the fact that the arch either has not been widened enough or has been overwidened.

On one point I wish to differ slightly from Dr. Hawley. He stated that where there are a number of temporary teeth present and the indications are for widening the arch to a considerable extent, if this widening is done to the temporary teeth, the unerupted permanent teeth are moved as well. I cannot entirely agree with that. It will depend on the stage of eruption. If attempted when these temporary teeth have little or no roots to them I fail to see how any movement of these teeth could affect the position of the permanent teeth. In such cases in the upper jaw, where it is desirable to move the permanent teeth while the temporary teeth are still in the mouth, it would seem to me that the logical method is to open the suture and thus move the unerupted teeth. I am not alone in this theory. Other ortho-

dontists have told me of their success since I advocated this method of procedure.

I wish to thank the Institute for being allowed to speak upon this subject, because I always wish to thank a man for a really valuable contribution to dental science. It is one of the most valuable papers that ever will be written upon the subject of orthodontia.

Dr. E. A. Bogue.—I am very much pleased with Dr. Hawley's presentation. Last March, after a week spent in delving among the dry bones in the National Museum at Washington, I met Dr. Hedlicke on Saturday afternoon, and, when saying good bye, he said to me that he had not taken much stock in what I had told him about the renewal of growth in the bones of the maxillae, face, and even the interior of the cranium consequent upon enlargement of the dental arches, but that after more careful consideration he had come to the conclusion that I was right, but that it would take me two years to prove it. There seems to be an indication that we, as orthodontists, are on the verge of an important discovery in an adjoining field, and of being able to prove this theory conclusively. Dr. Park Lewis, of Buffalo, who recently read a paper on adenoids before the Society of Orthodontists of Buffalo, has called my attention to it within the last week, and I have also read two or three papers in the same direction, among them one by Dr. Berens, another by Dr. Quimby and another by Dr. Swain. Dr. Lewis told me that he has had recently under his care two or three patients who had lost the sight of one or both eyes, caused by the cauterizations that were practiced to enlarge the nasal passages sufficient for proper respiration, and he expressed his delight that finally dentists knew what they were about sufficiently to be able to draw upon paper a mathematical plan which they could follow with certainty, thereby giving the proper expansion to both the dental arches, not only, but also to the nasal passages so that those passages would not have to be burned out.

Referring to the charge that artistic judgment is eliminated by this mathematical plan, Dr. Hawley does not think this is the case. Neither do I.

In these cases where there is an extremely high and narrow arch, it is my contention that when that arch is broadened, there is also a dropping down of the roof of the palate. The nasal

septum is thereby more or less straightened and the nasal passages enlarged.

I am exceedingly grateful to Dr. Hawley for this contribution.

Dr. H. Clay Ferris.—I have been using Dr. Hawley's method since the reading of his first paper, and it has been a great help to me. I welcome the missing link, as I have always guessed at that measurement.

In reference to these changes in the arch mentioned by Dr. Bogue I am of the opinion that there is a dropping of the palate when the arch is widened. I have a case where I know this has occurred to the extent of an eighth of an inch, where the arch has been spread a quarter of an inch. There was a lateral curvature of the vomer so that it came in contact with the middle turbinated bone. The septum is almost straight now and the air passage open.

It seems to me to be a perfectly reasonable mechanical proposition that if an arch is high and narrow, and that arch is broadened, the roof must drop.

Dr. R. B. Stanley.—I think this theory of Dr. Hawley's is one of the greatest arguments possible against the extraction of teeth for regulating purposes.

Dr. Hawley spoke of variations that might be made from this mathmetical arch. I sometimes think that an arch widened to the extent of the mathematical arch is not as artistic as I desire to have it, and I frequently stop one-eighth of an inch short of it. I am waiting to see whether this is right or not.

Dr. H. L. Wheeler.—I have no doubt but that this is a very valuable method for those who devote their time to it. However, I have never seen any evidence that nature indulges in mathematics. Dr. Hawley himself has told us that there is a great variation in the width of the teeth. All the researches in biology seem to teach us that nature does not work along mathematical lines. In the scheme of crossing plants there is no certainty of anything. Mr. Burbank, of California, has gone into these subjects with great minuteness, and all of his experiments have pointed to the conclusion that there is not the slightest evidence of law and order. As I look at it, we could not, with Dr. Hawley's scheme, hope to be accurate in more than a certain per cent. of cases, and I doubt if the percentage would be much greater than

it is in the case of plants when mathematical rules are applied to them.

Dr. Ottolengui.—This is a scientific body and it seems to me that any alleged fact should not be allowed to pass without proof, if it is apparently an improbability. The statement has been made to-night by two distinguished gentlemen, both of whom say that it can be proved, that if the arch be widened the vault can be lowered. I consider this an absolute impossibility. If any arch is widened the apex is not lowered unless the lower ends of the arch are kept on the plane that is started with. An arch widened by having its sides raised would be flattened, but the roof would not necessarily be lowered in the least. And this is what occurs in the mouth. To actually bring the dome down, the front of the vault along the suture must be separated and the central incisors deflected. As to affecting the nasal septum by these methods, in the front portion of the maxillae we have bone that is exceedingly dense and bone which could not be bent so as to lower the floor of the naries. We cannot lower the floor of the naries by simply widening the arch, especially the alveolar process being what it is, and, remembering that in moving it the apices of the teeth are not moved at all.

Dr. Hawley.—Even though I realize fully that all the complimentary things that have been said about this paper may not be true, yet they have given me the keenest gratification. Ever since I have practiced dentistry I have continually been under obligation to other men for new ideas, and I shall feel a great satisfaction if I have been able to repay, in a small measure, the debt I owe the profession.

In regard to the question of widening the arch when the temporary teeth are in position, I have no doubt that if the temporary molars of a child seven or eight years old are carried out the crowns of the bicuspids go with them, because they are at that time set down between the roots of the temporary molars, which are not yet absorbed, and, in doing this, their eruption into proper position is made almost certain. The effect upon the nasal passages must be beneficial. Just what takes place, I think, is uncertain. I believe it is claimed that by widening the arch the roof of the palate is lowered. In looking over my own models of cases before and after treatment, I could not by actual measurement find evidence that this had been done. It seems probable that in

widening the arch by attachments to the teeth, we simply slide out the alveolar process. However, I do not wish to be understood as making any positive statement on that subject.

As to the question raised by Dr. Wheeler, it seems to me that so far as our dealing with the problem presented, it does not matter how nature attains the results. We know that the results are mathematically correct. The whole structure of the body—the bones, the working and arrangement of the muscles, etc.—are examples of the finest mechanical and mathematical adjustment. And it has been conclusively demonstrated that the working of the human jaw and the arrangement of the teeth is an example of fine geometrical and mathematical adjustment. We know that this is true, and we must conform our work on the human teeth to those principles.

Gentlemen, I feel very much pleased and complimented at the reception my paper has received at your hands, and thank you most heartily.

Upon motion, a vote of thanks was extended to Dr. Hawley, and also to Dr. Merriam and Dr. Ainsworth, for their contributions to the month's proceedings.

Adjourned.

FRED L. BOGUE, M. D., D. D. S.,
Editor The New York Institute of Stomatology.

OBITUARY.

JOSEPH N. DAVENPORT.

Joseph N. Davenport was born on Catamount Hill, Colrain, Mass., November 21st, 1829, the son of Nathaniel Davenport, a physician and farmer. He was given a common school education, and when fifteen years of age went to Haydenville, Mass., where he was employed for some time in the cotton mills of Hayden & Saunders, soon, however, because of his natural taste for mechanics, becoming a contractor in the gold pen works of Dawson, Warren & Hyde in the same town.

Desiring to enter a profession, and thinking he had a taste for

dentistry, he went to Pittsfield, Mass., in 1854, and entered the dental office of Williard Clough, M. D., as a student.

After practising several years in Haydenville he removed in 1862 to Northampton, Mass., where he achieved great success and occupied an office in the same location forty-four years until his death, which occurred April 13th, 1906, in the seventy-seventh year of his age.

In 1850 Dr. Davenport married Lucia A. Holmes, of Williamsburg, Mass., who died March 5th, 1899, their married life lacking but a year and a half of the golden wedding anniversary. There were four children: one daughter, who died in infancy; Miss Netta, who resides in the family home on Elm street, Northhampton, and two sons, Sebert E and R. Melvin, both practising dentists in New York City.

Joseph N. Davenport was the first of his family to enter the dental profession, and among the various students he had may be mentioned his two brothers, Dr. A. F. Davenport, of North Adams, Mass., and the late Dr. J. L. Davenport, of New York City; his two sons and Dr. Horace S. Bascom, of New Haven, Conn.

His example in the choice of a profession has been followed by many members of the Davenport family of two generations. Joseph N. Davenport was a noted player of the outdoor game "roque" and was identified with the National Roque Association for over twenty years, being its president in the year 1899.

Dr. Davenport was much interested in the work of dental societies, was identified with the old Connecticut Valley Dental Society until it was changed into the Northeastern Dental Society, and at the time of his death belonged to the Northeastern Dental Society, the Massachusetts State Society, the Valley District Society and The New York Institute of Stomatology.

THE JOURNAL

OF

THE NEW YORK INSTITUTE OF STOMATOLOGY
AMERICAN ACADEMY OF DENTAL SCIENCE
HARVARD ODONTOLOGICAL SOCIETY

AND THE

METROPOLITAN DISTRICT

(MASSACHUSETTS STATE SOCIETY)

Vol. I OCTOBER, 1906. No. 3

OUR AIM.

"Would I exchange this Wisdom Hunger, tho,
For all the easy calm of those-who-know?
Or barter the wild surges of my soul
For ordered throbbings of a heart in tow?"

It is our desire to place before our profession a journal that shall be the vehicle for carrying such opinions, experiences, researches and discoveries as shall be of value in assisting the growth of the intellectual together with improvement in the technical.

A printed page that shall be the mouthpiece of those who believe that existence has for them some responsibilities as well as opportunities.

For those who may feel moved to share with their fellow practitioners such wisdom as they have been fortunate enough to attain and who are desirous of speaking without regard to whether

it shall coincide with supposedly established views or not. Also for those who aim to present the truth regardless of its effects upon the personal interests of any particular individual or group of individuals, requiring only that the motive of the speaker shall be to contribute towards what he conscientiously believes to be the establishment of truth.

We believe this will stimulate our profession to renewed efforts in the service of humanity.

As a first step to serve our profession and thus humanity, we think it necessary to have a medium of publication guided by those who are free from political ambitions and who have no financial interests to be affected by the public discussion of any subject pertaining to our professional interests. We shall welcome contributions that stimulate high thinking and conscientious action in our chosen profession and such as may provoke discussions that will assist us to expand and advance along those lines that make for greater usefulness to our patients and greater helpfulness to one another.

It seems to those who are giving of their time and energy to start this Journal that the world has progressed so far that great masses of the people are looking beyond the mere "struggle for existence" to that higher ethical plane of assisting in the preservation of the existence of others and that the profession of dentistry, as a branch of the healing art, should take a more advanced position in regard to our responsibilities and duties towards our fellow men that we may be more in harmony with the sentiments of our colleagues of the medical profession.

With this end in view this Journal has been established in the confident belief that an increasing number of our profession have reached the point of character development and culture where they will not only gladly assist in the continuance of this venture, but will consider it a privilege to so do.

We have no desire to work in a spirit of antagonism to such journals as are already in the field, only to supplement them and

enlarge the horizon of our professional life and attainments so that the discriminating public may extend to us as a profession that confidence which is begotten of a certainty that we have made their interests our interests.

HERBERT L. WHEELER.

October 1st, 1906.

ON THE FORMATION OF THE TEETH, AND THE REASONS WHY THE PROTECTIVE COVERING IT SO OFTEN DEFECTIVE OR DEFICIENT.*

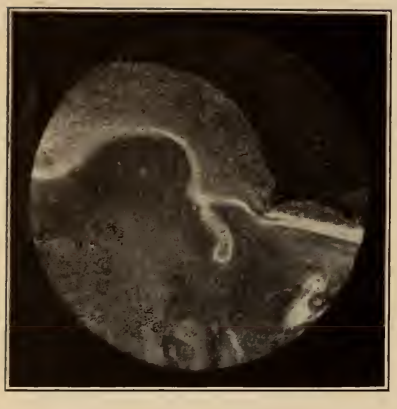
BY R. R. ANDREWS, A. M., D. D. S., CAMBRIDGE, MASS.

This is the title sent to me to discuss, by the chairman of your executive committee, suggested, I believe, by Dr. Bogue, who thought that a discussion of it might be profitable and interesting to the fellows of the institute.

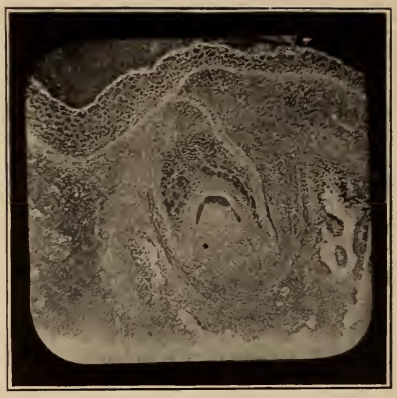
The formation of the teeth will be considered at the conclusion of this paper, at which time I shall demonstrate this upon the screen with the aid of my lantern slides. We can then renew our knowledge of the histology of the subject, and I can thus pass on at once to the consideration of that more important part of the discussion, the reason why enamel is so often defective, or deficient. I lay no claim as an authority in pathology, basing my conclusions almost entirely upon an experience of many years of research work and in studying the histology and physiology of the various developmental processes taking place while teeth are forming. In our literature, we find very little that pictures the process of formation of faulty enamel. If I shall be able to make this matter clear to you by my discussion and demonstration this evening, I shall have accomplished all that I can hope to do.

The vital force, or better, the vitality of a tissue, is of the utmost importance in our consideration of enamel formation. By vitality is understood the secretory or selective activity of the living cells—a manifestation of force—a physical or chemical property of living matter not yet brought into line with the known forces of the inorganic world, but whose existence cannot be denied. Understanding vitality thus, we must assume, what most of

*Read before The New York Institute of Stomatology, May, 1906.



No. 1—Enamel Organ, First Stage of Growth.

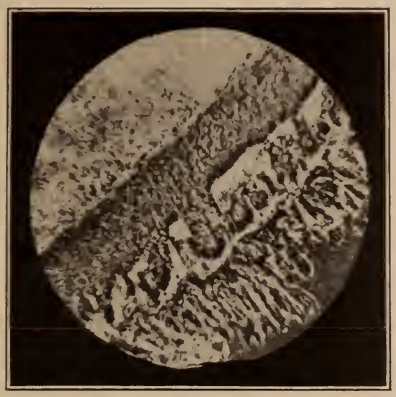


No. 2—Enamel Organ and Dentine Germ, Showing Layers and Growth.

us accept without direct proof, that normal vitality regulates normal nutrition, and that any lowered vitality of tissue will cause a resultant malnutrition of that tissue. This holds just as true for the individual cell as for tissue, and applies directly to the ameloblast. To recapitulate, lowered vitality of the individual results in lowered vitality of the ameloblast, and reduces its formative powers. Certain factors always reduce the vitality of tissue in general, such as acute infections, hereditary or constitutional disease, and any of these must therefore act to reduce the nutrition of the enamel building cell, a degenerative evolution.

No. 3.—Emeloblasts and Odontoblasts with Forming Dentine and Enamel. From J. L. Williams' Specimen.

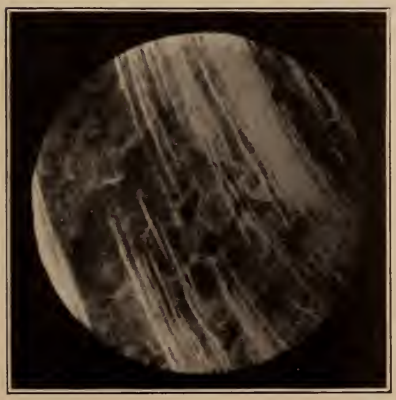
No. 4—Developing Tooth.



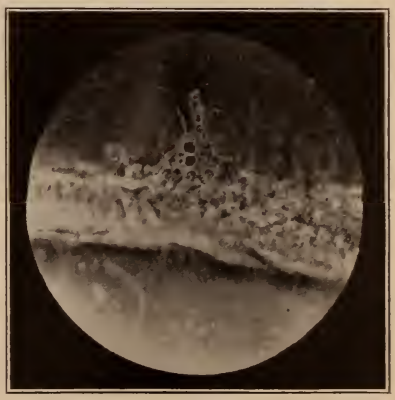
No. 5—Dentine forming from Layers of Calco Globuline.

No. 6—Imperfectly Calcified Dentine Within the Formed Dentine.

Holt, in "The Diseases of Infancy and Childhood," in his chapter on malnutrition, says, "It may depend upon inherited conditions; certain children are delicate from birth, possessing only feeble physical vitality, though without giving evidence of any actual disease. They are often the offspring of parents of delicate constitution or of those of inherited tuberculosis, gout, syphilis, or alcoholism. Very many city children are included in this group. They are a product of modern life and inherit a too highly developed nervous organization, with a corresponding amount of physical deterioration. These children get a poor start in life and on that account are handicapped throughout infancy.

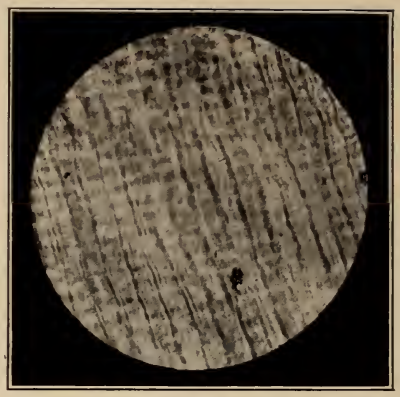


No. 7—Imperfectly Calcified Dentine. Interglubular Spaces within the Dentine Infected.



No. 8.—Globules Forming Enamel Rods.

No. 9.—Forming Enamel from Globules.



No. 10.—Normal Calcified Enamel. High Power.

In many cases, malnutrition develops as a result of the patient's surroundings. While this is common among the poor, it is not rare among the better classes. In infants, malnutrition often depends upon some previous acute disease, especially of the stomach and intestines, and sometimes of the lungs. In children who are over two years old, the condition of malnutrition may be due to any of the factors above mentioned,—inherited feebleness of constitution, bad feeding and its resulting indigestion, too little fresh air, and close confinement indoors. It is, however, at this period much more frequently than in infancy dependant upon some previous acute disease. * * * As a result, an impression is left

No. 11—The Effect of Malnutrition in the Tissues of the Teeth. Faulty Dentine and Enamel.

No. 12—Defective Enamel.

No. 13—Defective Enamel. Undermining Caries of Enamel.

No. 14—Defective Enamel. Undermining Caries of Enamel.

upon the child's constitution which lasts for months, often for years, and which manifests itself, not by any special local symptoms, but by a general condition of debility or malnutrition. Sometimes such diseases, instead of being directly the cause of the symptoms, are the occasion which brings out some latent inherited taint or constitutional weakness in children, who, up to this time perhaps, have appeared exceptionally healthy. * * * One of the most striking things about children suffering from malnutrition is their vulnerability. They take everything. * * * One illness often follows another, so that these children are frequently sick for almost an entire season. * * *

No. 15.—Defective Enamel. Undermining Caries of the Enamel.

No. 16.—Defective Formation.

If the cause is constitutional or inherited, the condition may last throughout childhood. * * If the malnutrition is the result of the child's surroundings, like the confinement incident to city life, very rapid improvement may follow a removal to the country."

It is, perhaps, unnecessary to mention here that these conditions, spoken of by Dr. Holt, exist during an important dental developmental period, when the formation of the enamel is taking place. In order to appreciate the amount of enamel formation active at this period, let us for a moment consider the development of the jaws from birth up to the sixth year and beyond.

Dr. E. C. Kirk has most ably pictured this in his article on the "Stress of Dentition," in the Cosmos of June, 1905. He says: "Anyone who has undertaken to examine a series of skulls covering the ages referred to, must have been struck with the extraordinary evidence of dental activity which they manifest. The alveolar arches of both mandible and maxilla seem to be overcrowded with teeth in all stages of development and resorption, indicating a functional activity with all its necessary increase in vascular and nervous intensity, far above that which is normal to these regions after tooth evolution is complete."

As I have already stated, the various constitutional disturbances that take place during development of the teeth are powerful factors in causing defective or deficient enamel. Hutchinson has pointed out the influence syphilis has on the cutting edges of permanent incisors, and Hutchinson teeth are considered an evidence of the existence of that disease. Rickets is a disease of lowered vitality from faulty nutrition during infancy, and children troubled with it seldom get their temporary incisors until late, sometimes not until after the first year. The superior permanent incisors are sometimes notched. The enamel is defective on the cutting edge, and the interval of time between the eruption of the various teeth is irregular, more so than the normal average. The permanent incisors may also decay soon after eruption.

The temporary teeth sometimes show defective or notched enamel in rickets, and during embryonic development, the tips of the sixth year molars are forming, but in this paper we shall only consider the formation of perfect and imperfect structure of the permanent teeth.

That we may receive a clear idea of how defective growth

takes place, it will be necessary for me to give a clear description of the minute processes that occur during the formation of the enamel, and I shall therefore quote portions of several papers that I have previously written on this subject.

The enamel builder, the ameloblast, is a cell. Wilson, in his work, "The Cell in Development and Inheritance," states that the term "cell" is a biological misnomer, for whatever the living cell is, it is not, as the word implies, a hollow chamber surrounded by walls. The definition of Max Schultz that a cell is a mass of protoplasm containing a nucleus, would apply to the ameloblast much better, for these cells are merely masses of protoplasm, each containing its nucleus, that have been given their prismatic or columnar form by the mechanical pressure of surrounding structures, or by unequal growth and differentiation, or by active movements of the cell substance itself. The word cell, however, has become fixed in scientific nomenclature, and efforts to replace it by a better name have failed. We shall, therefore, be compelled to use the term "cell" in describing the individual ameloblast. The former name of the content of the cell was protoplasm, a substance viscid, translucent, and granular, either continuous or interrupted by more or less spherical spaces or vacuoles, filled with fluid, often forming a net-work or sponge-like structure extending through the cell body, and showing various structural modifications in different regions, and under different physiological states of the cell. Lodged in the protoplasm, discontinuous with it, and forming no part of it, are either collections of fluid, or discrete granules held either in the thread or substance of the protoplasm, or in the vacuoles or meshes. Although we cannot distinguish between those parts of the cell which are living, and those which are to become living, and those which have ceased to be living, in their various stages of change, yet in a general way, protoplasm may be said to be the living substance of the cell. In the enamel building cell, this living substance is diffenentiated into two very distinct parts,—nucleus and cell substance—the more important of which is the nucleus. This nuclear substance is called karyoplasm; while to the contents of the cell body proper the term cytoplasm is given. In the ameloblast, the living matter is always undergoing chemical changes, very much as it is in gland cells, namely, a building up and a breaking down, with respectively a storing up and a setting free of energy. This

process we call metabolic activity of the living substance. The ameloblasts are specialized cells whose function ends with the formation of enamel. In it we do not find, indeed, we do not expect to find, all the structural appearances that are found in the typical embryonic differentiating cell, but enough has been seen to show that there exists within the ameloblast a recticular structure which is the cytoplasm. When the process of enamel calcification is about to take place, we find that the connective tissue with its rich net-work of capillaries, has come into close proximity with the upper ends of the ameloblasts, a layer of cells from the stratum intermedium being imposed. The external epithelium of the enamel organ and the cells of the stellate recticulum have disappeared from the part. The spindled shaped cells of the stratum intermedium are, by some authors, credited with being connective tissue cells, and that the ameloblast, at this stage, strongly resembles a gland cell. These form a layer of columns over the already calcifying dental cusp. It is assumed that we are all familiar with the appearance of the developing tooth at this time. The first indication of enamel calcification is seen in the ends of each of the ameloblasts, and this indication is in the shape of a globular or mulberry-shaped mass, which has been formed and deposited by each cell directly upon the formed dentine within a mass of protoplasmic substance, or exudate, where it forms the first segment of the rods which are to become the enamel. The cement substance which surrounds them appears to be of the same nature as the contents of the cell body.

The process of calcification within the enamel cell is a difficult problem for the dental histologist to unravel. The tissue which is under his microscope is dead tissue, and the processes which take place during life have ceased. We see only that stage of growth and action which has taken place before the microtome cut the section, after death of the tissue. Another section cut during a different stage of cell activity, will give a different picture corresponding to its period of life. There are also post-mortem changes which could not have existed during life, and to make this matter somewhat clearer to us, I quote from a valuable article which appeared some time ago in the *Journal of Morphology*, entitled, "The Calciferous Glands of the Earthworm," by Nathan R. Harrington, in which he shows the method of formation of lime bodies within the cell structure of these low

forms of animal, showing especially the glandular action and blood supply of their calciferous glands, the regeneration of these glandular cells and their nuclei, which are shown to disintegrate during secretion. I wish to call your attention particularly to Harrington's description of cell activity, and ask you to note its similarity to the formation of minute globules of lime that we find in the ameloblasts. In his researches, he shows how glandular tissues recuperate after the waste caused by secretion, how the regenerated cell substance is transformed into especially differentiated material, and how these products of secretion become released from the cells. For this investigation his material was well adapted, for the lime producing cells are in this instance almost isolated from each other in the natural state, and the cell activities can thus be easily studied in their various morphological changes. Also any desired stage in the cell history could be obtained by feeding the worm normally through the soil in which it burrows. Mr. Harrington found that stimulation thus with acid food caused an oversecretion of the glands, and thus the study of the constructive stages in the lime formation, and the resultant degeneration and regeneration were greatly facilitated. He noted that the nuclei of the cells are oval, small, with heavily staining granular chromatin and feebly defined nucleolus. The cytoplasm is dense and composed of elements closely knit together. At a later stage, the cytoplasm expands a little about each nucleus, a slight projection is raised up; and as the action proceeds the cytoplasm continues to increase in extent. It becomes less dense, and vacuoles appear here and there, the nucleus becomes decidedly vescicular, the nucleolus large and deeply stained. In normal worms, this stage is the height of constructive activity, and the cell is now ready for the changes which will result in the formation of lime globules. There can be no doubt that the secretion occurs in its final form inside the cell before the latter is broken down. Minute round globules appear at the nodes in the recticulum and almost fill the spaces or alveoli between the loose cytoplasmic net-work. Sometimes a single shred of the cytoplasmic substance can be seen in the gland cavity with a few of the globules attached to it. In a cell which has passed the height of constructive metabolism, these round globules may be seen shooting out, as it were, from the nodes of the disintegrating cytoplasm, apparently having grown in much the way that certain mineral crystals form in a strong

organic solution. Harrington further says, "Although I have very distinctly made out the small globules inside a cell which has not yet broken down, and have seen them dissolved by acid, it is quite impossible to determine whether they are derived from the reticulum, or partly from the cell sap which fills the spaces."

As the small globules accumulate more and more, growing at the expense of the cytoplasm, or causing the latter to fall away, large vacules appear in the club-shaped cell projections, and through these the lime globule makes its way into the gland cavity, probably often forced out of the cell by the mechanical contractions of the surrounding tissue. There is very probably an organic matrix surrounding or permeating these small globules when they are first formed, otherwise one cannot understand why they should be globular rather than rhomboidal in shape. Moreover a residue is always left after acid treatment. Nearly all the cytoplasm in the cell is used up in the production of lime globules. Coincident with the appearance of new nuclear elements from the wall of the blood sinus or from the blood, the constructive process starts up again, and there is a repetition of the lime forming process. To summarize, first are observed constructive processes of the cell during which elements derived from the blood are built up into cytoplasm; next, these elements are transformed, and in them elements of the cytoplasmic reticulum give origin to lime globules; then follows a gradual accumulation of globules inside the cell until the walls are broken and the lime globules, with more or less attached cytoplasmic reticulum, are cast out into the gland cavities. With the rise of another cycle of secretion, a younger generation of nuclei appear nearer the blood sinus. Delapidated nuclei, formerly active, can still be seen at the distant parts of the cell cytoplasm. One might be tempted to regard the extremely thin layer of cytoplasm as a membrane through which lime in solution passes by osmosis directly from the blood, but no positive evidence can be offered for the proof of this view, while we know that substances from the blood are first connected with cytoplasm—either the reticulum or the cell lymph—and appear as lime crystals or globules only at the distal ends of the cell, after the cytoplasm has undergone considerable differentiation."

"Stohr goes so far as to state that gland cells generally have their secretion appear first in the form of granules, but these calciferous glands form the product within the cell with absence

of granular or threadlike stages in the normal production of lime, and with a disintegration of the nucleus during secretion, after a definite and constant cycle of changes, which is corelated with progressive changes in the cytoplasm, and a replacement of the nucleus. If the substance of the reticulum, in which the lime is seen, was ever an integral part of the nucleus or in structural connection with it, it must have been during the constructive phase, it was generated as cell protoplasm. There are never granules or threads of any kind discernable which arise from the nucleus. The nuclear and cytoplasmic structures resemble each other very closely in their exhausted condition. The disintegration of the cell during secretion is entirely consistant with two other characters which indicate that the lime producing cells are very much specialized; there is no membrane bounding their irregular contour, and the cells from which they have descended, divide by amitosis."

From this research work of Harrington's we are given a fair idea of how the salts of lime are furnished to the cell by the blood supply, and how, within the cell, they are formed into minute globules, which are calco-spherites. I shall try to describe how normal enamel building takes place, because it is necessary for us to become familiar with the process in order to comprehend fully the various changes that are brought about during the existence of pathological conditions, which result in forming defective enamel. Enamel begins to form on the temporary teeth about the seventeenth week in embryo, ending at about the sixth month after birth. On the permanent teeth, it begins to form at birth on the cutting edges of the sixth year molar, and ends about the tenth year on the crown of the wisdom tooth. As the enamel organ forms over the papilla which is to be the dental germ, the cells covering the germ, named the internal epithelium of the enamel organ, become the ameloblasts or the enamel builders. They are undergoing a histological differentiation—they have grown from epithelial elements to columns or masses of protoplasm. A marked change has taken place within them. As builders of a calcified structure they differ from the surrounding cells, by a peculiar metamorphosis they have become specialized. They now become a physiological apparatus, a sort of chemical laboratory, if you please. In this condition they are unlike other cells, being unable to lead an independent existence. The builders of the cal-

cified enamel have scarcely any membrane. The power of the cytoplasm of these cells, with its formative activity, creates with the lime from the blood, minute globular bodies. These are plainly seen to differ from the cytoplasm, by which they are placed so that they occupy a definite position of fixed form and structure. Thus it will be seen that the special function of these cells is to absorb the calcific material from the blood. Within the cells it is elaborated, and then given out on the calcifying dentine in an altered form. The calcarious matrix is not formed out of the protoplasmic substance alone; this protoplasmic substance plays the part of an intermediary, selecting its earthy matter from its environment.

In that portion of the ameloblast, farthest away from the calcifying enamel, calcific matter is being elaborated by lime mingling with the protoplasmic fluids. It is in such fine subdivisions that it is not often visible, even with our highest powers. A little lower in the region of the nucleus we have an ocular demonstration of it in the form of minute globules of calcific matter. These have been named calco-spherites, and they appear to enlarge, not by growth, but by a process of coalescing, becoming larger as they are conveyed by the living matter of the cell to the region of the calcifying enamel. Here they are found to have coalesced into their typical form, very nearly of uniform size. As the enamel globules are placed near the point of calcification, they are found to be somewhat larger than the rod they are to form. By some power they seem forced inward against the portion calcified, as if undergoing some sort of compression. Each mass is as yet separate from its neighbor, with the semi-solid cement substance round and between it. If this young enamel should now be teased away from the layer of ameloblasts, we should see where the epithelial fibres are. They stand out from the section somewhat like the teeth of a comb, but are so covered with the protoplasmic cement substance, which is partially calcified, that it masks them, and it is somewhat difficult to distinguish them as fibres; but they are too regular in their arrangement to be accidental formations, caused by the pulling out of calcific matter to form plasmic strings. If we examine another section, showing the enamel forming layers and the formed dentine, we shall find what appear to be fibres spanning any space from the ameloblasts to the formed dentine, in a regular, systematic order, as I shall show you this evening.

The so-called plasmic strings, I am led to believe, are simply epithelial fibres, a sort of scaffolding. The enamel rods are thus built up, globule on globule, until the rods are complete. New ameloblasts are formed to supply those necessary to cover the larger circumference of the surface as it forms, and all tissue calcifies, and thus normal enamel is formed.

With this description of the processes of the formation of normal enamel, we should be better able to comprehend the conditions which result in the formation of pathological tissue. Why is the enamel deficient? We know that the soluble salts of lime are derived from the blood capillaries everywhere against the top of the formative cells, during enamel development, as I have already said. The lime is injested by these cells, and calco-spherites are formed. These, coalescing, blend into the globular bodies that form the segments of the enamel rods. Now, if fevers exist while this tissue is forming and there are inflammatory and ulcerative processes going on on the mucous membrane during any part of the formation of enamel, the blood capillaries by this same inflammatory or ulcerative process, may be partly, and perhaps wholly obliterated, cutting off the supply of lime and even destroying the cells that build the enamel. Under such condition, we should find the building process stopped, and as a result the tooth would erupt with deficient enamel, sometimes with hardly a trace, sometimes with nearly the normal covering, depending upon the age of the child when taken ill. In many cases the capillaries and the ameloblasts have not been wholly destroyed, but the tissue formed during disease is imperfectly calcified, is granular and pigmented, and in some places on the grinding surfaces the dentine may remain entirely uncovered. We are all familiar with rocky enamel, more often found on the bicuspids and molar teeth. In many cases the dentine is wholly covered, and if the patient is a vigorous and healthy person, this tissue, though deficient, may protect the dentine from infection during life.

Defective enamel may form during a period of illness, after a certain amount of normal tissue has been formed, and afterwards normal tissue may cover this defective layer. The defective tissue is almost always found to be in the shape of a layer of granular, club, spindle, and pear-shaped irregular blotches, sometimes slightly pigmented. This irregular granular layer covers the enamel which has normally formed up to the time of patholog-

ical change. When health returns, normal formation again goes on, and this granular substance is imprisoned thus, within normal tissue, and may exist only as a slight layer of imperfect tissue. In other cases, pathological conditions may be long continued, and a considerable amount of the enamel may be involved, and a layer of considerable width abnormally formed. This tissue is found to be poorly calcified, shrunken, granular, and somewhat pigmented. It causes the formation of grooves, and of the pitted appearances we find so often on the faces of the crowns of teeth between the upper and lower normally formed portions. Granular or imperfectly calcified tissue may also form on various portions of the enamel. Such pathological conditions cause an imperfect calcification. The vitality is low and malnutrition is the result. The fusion of the salts of lime with the cytoplasmic exudate is incomplete; the lime does not form globular bodies as it does when normal enamel is formed, but is carried through the building cells as granules to be deposited upon the already calcified surface in an imperfect form, and thus granular blotches in layers are calcified within the otherwise normal structure. These granular blotches resemble somewhat the interglobular spaces that are found forming within the substance of the dentine, while these same pathological conditions continue. It may interest you to know something about dentine, and its growth during this period of disease. The formation of normal dentine from the dentine germ proceeds substantially in the following manner: We notice that the hyaline substance on the rim of the germ, which is a protoplasmic exudate that surrounds the outer ends of the formative cells, is filling up with minute, glistening, irregular-shaped masses that appear semi-solid, many of them being globular, but all tending to form by fusion a layer of a substance which is involving a portion of the outer ends of the odontoblasts. In this way layer after layer is formed until the dentine is completely calcified. The layer which is forming is a new product and a transition tissue.

In this condition it is known as calco-globulin; a further chemical change forms it into the fully calcified structure. Thus the dentine is formed layer after layer, and stage by stage. As one layer of this substance calcifies another forms, and so on. The dentine shows this layer formation especially well during development. This nutritional condition is repeated over and over

again, until calcification is complete. Understanding this, one can readily perceive the effect of disease, or of the lowering of the vital forces at this time. Some of the layers are sure to be imperfectly formed. The fusion of lime and protoplasmic exudate is incomplete. Calco-globulin is abnormally formed. Whether the substance of the protoplasmic exudate is affected or not by these nutritional changes is not certainly known. Under the higher powers of the microscope it shows no difference in structure. A decreased vitality would probably cause it to be weakened and defective to a greater or less degree. Malnutrition would show its effect here, as well as in the enamel, in the lessened supply of lime from the blood, and the character of the exudate formed during the diseases of early infancy must necessarily be below the normal.

I think it fair to assume that the tissue is affected, in that it is formed during a perverted development. In the formation during disease of a layer of calcoglobulin, there is a deficiency in the supply of calco-spherites. They are given to the protoplasmic exudate sparingly. In it the globular bodies are unevenly fused. Under the microscope, we see masses of globules which have calcified as islands, not perfectly filling the substance in which they rest. Some of these globular masses are seen clear and distinct, others are indistinct, as if just out of focus. Some are perfect spheres, others are fused together, having a mulberry-like form. In fact, the alteration of the developmental force is most marked. These imperfectly formed layers may continue to be formed during the period of the disease. When health returns, normally formed layers develop, and the imperfect ones are closed in from the nutritional impulses of the receding pulp, and their condition or substance, which is imperfectly formed or transitory, thus become an area of abnormal formation. The globular masses in these imperfectly formed layers are calcified structures. The protoplasmic exudate which surrounds them seems little changed. Some writers speak of it as an interglobular cartilage. The dentinal fibres seem to pass indifferently through both these hard and soft structures.

These imperfect or partially calcified layers exist in the dentine in different degrees. In some sections which we examine they have the appearance of contour markings. In other specimens which have been formed during the diseases of infancy, the

whole substance of the dentine seems to be a conglomerate mass of globules, having the interglobular spaces filled with the interglobular cartilage.

In conclusion then, deficient enamel is caused by pathological processes taking place during development. These processes are of an inflammatory or ulcerative nature, that may obliterate the blood supply and even the enamel building cells themselves, thereby preventing formation of structure. On the other hand, defective enamel is caused by an abnormal assimilation of the calcium salts with the cytoplasmic elements of the ameloblasts, whereby granules or particles, instead of globules are formed. This condition is brought about by malnutrition of the cells themselves, from a diminished capillary blood supply. We can thus trace the effect of disease to abnormal enamel formation, through its effect upon the ameloblast, the building cell.

THEORIES MADE FACTS.*

BY E. A. BOGUE, M. D., D. D. S.

During four or five years I have advanced the opinion that the position of the deciduous teeth affects the permanent teeth, and that therefore any irregularities in the deciduous teeth should be corrected in order to prepare the way for the permanent teeth.

If the deciduous teeth are brought to occupy a normal position, the crowns of the underlying permanent teeth will naturally take a correct position and their roots will be formed in harmony.

To illustrate this theory I present three cases, 7, 8 and 10 years of age, which are under treatment, in order to show changes which have taken place within a year.

These results have been obtained by means of very simple apparatus. But they are highly instructive to those who are interested in orthodontia.

It should also be added that the effects of such operations reach much farther than would appear at first sight. Indeed they are almost incredible; and few, if any, and those mostly physicians practicing largely among children, have yet begun to realize them.

Four years ago I had the honor of presenting before the Dental and Oral Section of the American Medical Association

*Read before The New York Institute of Stomatology May 31st, 1906.

some observations upon two cases of orthodontia. This paper was discussed by several of the members, who seemed to express doubt as to whether operations in orthodontia performed upon the temporary teeth of children from five years old and upwards could

Fig. 1.

be of any permanent benefit, and whether they might not be injurious to the permanent teeth that are at that time in process of formation beneath.

Since then doubt has been expressed as to the utility of moving the deciduous teeth; doubt as to whether such movement could have any effect on the positions of the permanent teeth that are still unerupted.

Your attention is invited to the illustration of a child's skull, not far from normal.

It will be seen that the roots of the molars carry the permanent bicuspid crowns, which as yet have no roots, so thoroughly in their grasp that any movement of them would naturally be imparted to the permanent teeth.

I present now for your consideration three cases taken from among ten that have recently been under treatment, on all of which I placed regulating apparatus in the early part of last year.

I saw none of these cases during a period of four months or more from the time that I finished adjusting my regulating

Fig. 2 A. Fig. 2 B.

apparatus until they again presented themselves for renewed treatment.

The first that will be presented is Henry M., the younger brother of John and Louise M., whose cases were presented four years ago. As I have just completed the arrangement of fixtures in his mouth to permit of his going to Europe for several months, I will describe the procedure from the beginning up to this time.

Figs. 2 A. and 2 B. represent the mouth at six years of age.

The malarticulation of the temporary molars when closed shows that the permanent molars, if left to themselves, will erupt irregularly, while the left superior central incisor just appearing

Fig. 3 A.

Fig. 3 B.

shows that the front permanent teeth are out of place.

Figs. 3 A. and 3 B. show the mouth at seven and a half years of age.

The curious feature is here presented of two permanent molars erupted in the upper jaw, while not a trace is to be seen of any permanent molars in the lower jaw.

At the same time the right superior temporary lateral incisor has fallen out prematurely, causing a depression of the arch at that point and a wide separation of the permanent central incisors.

At eight years of age the Ainsworth fixtures were placed on the temporary teeth to broaden the arches both above and below to give room for the eruption of the permanent teeth. Attached to the lower molar bands on their lingual sides were two wire springs made after the Jackson pattern, with a stronger arch wire passing beneath the tongue, to which these wire springs were tied with silk while the bands were being cemented to place.

After the cement was fully set, the silk was cut, releasing the springs, which then pressed forward lightly but continuously on the lingual sides of the lower incisors; and being held downward by some little projectfng lugs extending backward from bands

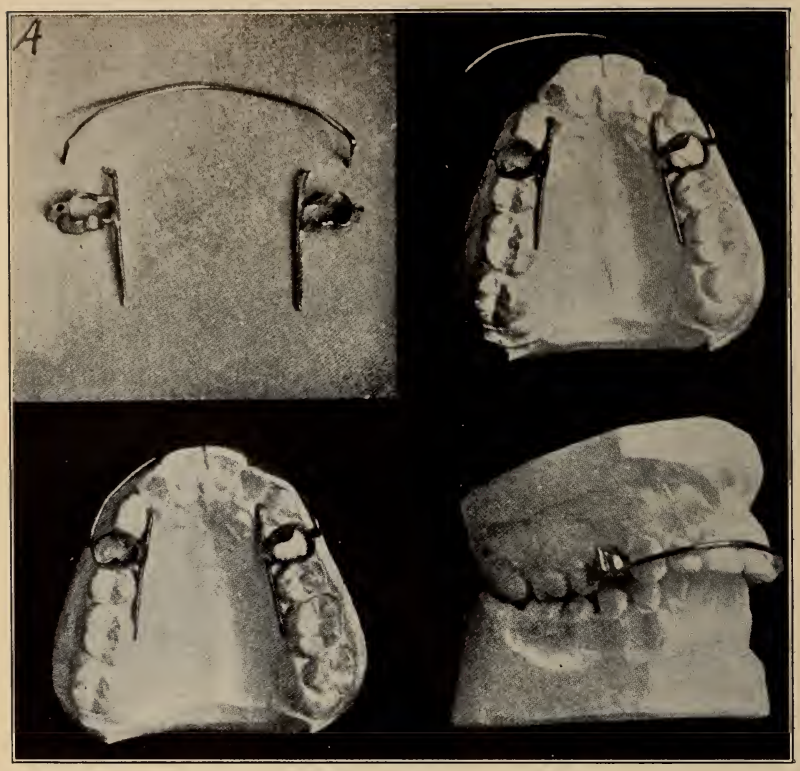


Fig. 4.

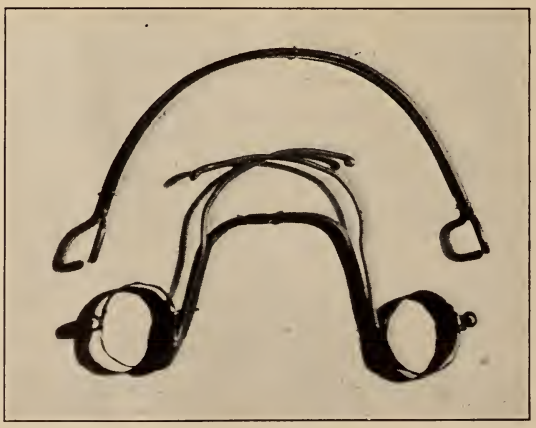


Fig. 5.

cemented to the two lateral incisors, these wire springs could not slide upward on the inclined planes of the incisor teeth, but expended their force in a forward direction, moving the teeth gently but surely to the lines to which these spring wires had been previously bent and adjusted.

After some spreading had been done, intermaxillary elastics were applied to act reciprocally, that is to say, to draw the upper molars forward while an equal pressure was exerted backward on the lower molars.

While getting the principal molars into proper articulation with each other, care was taken at the same time to advance the upper incisors also until there was room enough between the first permanent molars and the incisors for all the bicuspids and cuspids to erupt easily, and until the lower incisors were formed into an

Fig. 6 A.

Fig 6. B.

arch, corresponding in shape and size with the arch drawn to his measurements.

At this stage I was notified that the family was to go to Europe to be gone several months, so on April 10th, 1906, the conditions were as follows:

See Figs. 6 A. and 6 B., showing the models open and closed with the fixtures in place for an absence of several months, if necessary. Patient is at this stage nine years old.

April 10th, 1906: The principal molars have been brought into nearly correct articulation. The arch at that point has been widened enough for his present age—nine years. The central incisors above and below have been advanced far enough from the molars to permit of the eruption of all the permanent teeth between them and the principal molars, and are themselves in almost correct position relative to each other. These spaces between the incisors and the permanent molars are maintained by wire arches passing around on the labial sides of the teeth above and below from molar to molar. Bands have been placed on the molars, and horizontal tubes have been attached to these bands to receive the ends of the arches.

The arches have two nuts on each end holding them accurately in place, and also allowing for forward or backward movement in case of future need. The incisors are ligated to the arches by small ligature wires. The second upper temporary molars are banded and have wires soldered to the lingual sides of these molar bands, which extend forward along the gum line, touching all the remaining temporary teeth. On the lower jaw similar wires extend forward from the molar bands, taking the places of the spring wires that served to advance the incisors. These inner wires, shaped as the perfect lower arch should be, are ligated to the outer arch with small ligature wires, for the purpose of drawing the temporary teeth, together with the crowns of the permanent teeth beneath them, into their proper places in the arches.

Just here I will digress to answer the question that arises in the minds of many of the thoughtful students of these questions as to how one may know when the temporary teeth shall have reached their proper places in the arches.

Many years ago Dr. Bonwill discovered that a mathematical relation existed between the width of a permanent central, lateral, and cuspid, and the entire arch, and from the measurements of these teeth he was able to construct the entire arch as it should be when normal.

When thus normally arranged it is found that all the teeth growing in one jaw articulate with the teeth of the other jaw, so as to furnish the largest area of grinding surfaces to each other; the cusps and the sides of the cusps, and the sulci into which they fit, all combining to furnish not only the best masticating surfaces, but to form dental arches that for strength and durability

cannot be equalled. The cusps of all the grinding teeth in such arches interlocking with the cusps and the sulci of their antagonists

Fig. 7 A.

Fig. 7 B. Fig. 7 C.

prevent any variation in position of any of the teeth either laterally or mesio-distally.

Dr. Hawley of Columbus, Ohio, recognizing these facts,

adapted this discovery of Dr. Bonwill to the use of the orthodontist, so that to-day by measuring the width of one upper central incisor or one upper principal molar we may approximate very nearly to the shape and size of the arch in which that tooth belongs, and may draw it upon paper so accurately that we may work to that arch with confidence. If there is any slight variation in the sizes of the various teeth in the same mouth, and we work up to the model, nature will make all proper correction in the way of diminution and adjustment to type without assistance, and at the same time without any injury to size or strength or the adaptation of the arches to each other.

Now to return. When the *upper* temporary molars in this case fall out, together with the wires that are attached to them, the permanent molars and the central incisors will still be held in their proper relations to each other, and there will be room for the eruption of all the intervening permanent teeth. It will be noticed that the right upper lateral incisor is about one-quarter of an inch back of its normal position, and that it is being drawn forward by a little cap swaged to fit and cemented to the tip of the tooth just appearing through the gum.

It was at this point that the temporary incisor was prematurely lost, causing the separation of the centrals.

When the *lower* temporary molars fall out, the lower lingual wires, being soldered to the bands of the principal molars, are expected to remain and to continue ligated to the outer wire arch in such manner as to hold the lower incisors forward and in their proper positions, while at the same time serving as a partial guide to the erupting permanent bicuspid teeth.

So when the lower arch of permanent teeth shall have erupted properly into normal positions, if there is room enough for the upper ones to erupt, we may expect the tongue and cheeks to be a sufficient guide to cause them to articulate properly with the lower arch.

The second of the three cases is a little girl, who was seven and a half years of age when the apparatus was placed July 15th, 1905. See Figs. 7 A., 7 B., 7C.

I did not see the child again until November 11th, 1905, when I found the arches in the condition shown in this illustration (Fig. 7 C.), having gained in width a little more than a quarter of an inch.

Fig. 8 A. Fig. 8 B.

During the past winter torsion has been applied to the right lower lateral incisor and the two upper laterals. At the present moment the arches are as represented in the illustration (Fig. 8 B.), and there is ample room for the eruption of all the remain-

Fig. 8 C.

ing permanent teeth when they do come. Fig. 8 A. is placed alongside for comparison with the present condition, eleven months later.

The little girl's health has improved markedly during the entire time that the apparatus has been in place. She has increased in weight and strength, and her rosy cheeks and bright manner indicate no sort of ill effects, but, on the contrary, great gain. There has been an expansion not only of the dental arches, but of the contiguous parts, upon which health, vigor, clear speech and full breathing so much depend.

I now present the models (Figs. 9 A. and 9 B.), of Miss R. B., eight years old, the third case. I put fixtures upon her temporary teeth May 29th, 1905, two years later when she was ten years old. I did not see her again until November 24th, 1905, when I took impressions. Fig. 9 C. represents the mouth as it was in May when I placed the fixtures; and Fig. 9 D. represents it as it was November 24th, 1905.

The change in the size of the arches during that time, under the operation of the Ainsworth fixtures like those mentioned in the preceding case, is plain to be seen. The increase in width between the principal molars is three-eights of an inch, almost one centimetre. On December 7th, these temporary molars became so loose that they had to be removed, taking with them the fixtures which had produced the spreading (See Fig. 10.)

I was able very soon by means of caps swaged to fit the grinding ends of the upper principal molars, that were only partially through the gum, to get them into proper articulation with the lower molars, where they remain.

The incisors are being held forward by arches attached to the principal molars. The permanent teeth are, as may be seen by the illustrations, erupting into the mathematically described arch, into which they ought to come without further assistance, and this arch is one-quarter of an inch wider than the arch of temporary teeth with which we began operations. Figs. 11 A. and 11 B.

The growth and general development in health, appearance and vigor is very noticeable. I have been asked if all the enlargement of these arches is to be attributed to the fixtures, and no allowance to be made for growth.

For reply, I present Figs. 12 A and 12 B, models of the

Fig. 9 A.

Fig. 9 B.

Fig. 9 C. Fig. 9 D.

same mouth two years apart, one having been taken in May, 1903, the other in April, 1905; and also Fig 12 C. of the same mouth, November 24th, 1905, seven months later than Fig. 12 B.

The measuring marks on these models show no perceptible growth in two years, from 1903 to 1905, but nearly one centimetre of enlargement in seven months.

Children requiring assistance in the development of their dental arches, require it because of cessation, partial or complete, in their general development, and the irregularities in position of their teeth are but symptoms of a more radical difficulty in their physical condition.

All these three children assure me that they have experienced no pain whatever from the operations.

Let no one suppose that the apparatus, which has produced the effects exhibited this evening, can be carelessly applied and carelessly left for six months, or even six weeks. Just as careful

Fig. 10.

calculation of the force employed, and of the direction in which it should operate, has been made in these cases as was made in working out mathematically the charts which indicate the precise points to which each of the misplaced teeth was to be drawn. In making the lower spring attachments, which later were utilized

for the lingual retaining wires, after getting the desired width between the temporary molars, I cut off the incisors and cuspids from the models and replaced them in the advanced positions which they should occupy and which are a little forward of the normal arch. To these lines I bent my wires, which consequently acted just so far and no further.

In other cases I have employed spiral springs around the ends of the arches, ligating with wire the incisor and cuspid teeth to the arches, which had been accurately formed nearly on the same lines used by Dr. Angle. The ends of these arches were screw-cut and nuts were placed upon them just forward of the spiral springs.

Fig. 11 A.

Fig. 11 B.

When the incisor teeth were accurately ligated to the arches, and the ends of the arches were placed in horizontal tubes attached to the anchor teeth, the nuts were turned down against the spiral springs just exactly the distance that the incisor teeth should move forward.

A danger in these long periods of waiting is that the patients may grow careless in the matter of cleansing their teeth, and serious decay may result.

Fig. 12 A. Fig. 12 B. Fig. 12 C.

An advantage of these long periods with the apparatus in place is that nature may have time to overtake our corrective operations on the teeth and may advance to even an expansion of all the contiguous bones of the face, and, I believe, of the head as well.

The relation of the superior dental arch to the contiguous bones of the head and face are shown in Fig. 13.

Dr. William B. Wood told me lately that he had had one youth upon whose teeth I had placed regulating fixtures last March, under constant observation, so accurately that he had been both measured and weighed every week since I commenced to

Fig. 13.

move his teeth, and that the boy had never ceased to gain both in stature and weight since the day my fixtures were applied.

This boy of fifteen was undersized, having ceased for a time to grow, and when after treatment by Dr. Wood he once more began to grow, these regulating fixtures were applied, and his attending physician was naturally anxious to know whether anything was being done that would in any way interfere with the boy's healthy progress toward development, and so fortunately a careful record was kept, without my knowledge, until the operation was completed, of the boy's exact condition from week to week during the whole period of operations.

American Academy of Dental Science.

A regular meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, February 7, 1906. President William H. Potter in the chair. The subject for the evening was: "The New Silicate Cements, or Artificial Enamels." Short papers were read by H. Carlton Smith, Ph. G., instructor in chemistry Harvard Dental School; Drs. R. R. Andrews and H. E. Cutter, of Cambridge, and William Y. Allen, of Boston.

PAPER BY H. CARLTON SMITH, PH. G., INSTRUCTOR IN CHEMISTRY, HARVARD DENTAL SCHOOL.

In considering the question of dental cements one of the first things brought to our attention is the fact that, as a rule, they are not of American manufacture, but come very largely from Germany. Perhaps we may wonder why; we may find our answer in a remark recently made by one of the professors at the Massachusetts Institute of Technology who said that the graduate of a German Dental School was a better chemist than he was a dentist. He knows better how to make dental cements than he knows how to use them, and he has to send to this country to learn how to use the preparation of his own manufacture. It seems to me that a cross between these two extremes might be desirable in our dental education. If we had considered this subject a few months ago I should have spent some time on the discussion of oxy-phosphate of copper cement. To-night greater interest centers around the new artificial enamels and I shall say nothing about copper unless some one is curious. In comparing the usefulness of the old and the new forms of cement it may be worth while to first examine the chemical constitution of the ordinary oxy-phosphate cement. This consists, as you all know, of a powder which is presumably a nearly pure oxid of zinc and a liquid which consists mainly of phosphoric acid, these two being united in such proportions that they shall form a basic or oxy-phosphate of zinc. The books tell us that the nearer we approach to absolute purity in both of these substances the more desirable is the resulting preparation, and while this is in a sense true, it is

also in a sense far from the truth. According to Dr. Remsen, the oxid of zinc on the market to-day is made by a combined process which produces zinc oxid directly from the ore as taken from the earth which does not seem to be so well calculated to produce a perfectly pure oxid as the old and slower methods of burning the zinc in the air or igniting a precipitated basic carbonate of zinc. Probably the purest oxid of zinc would be that obtained by ignition of a chemically pure zinc nitrate.

The liquid which we have been told is simply a delequesced phosphoric acid, we find upon examination contains also various amounts of zinc phosphate and occasionally aluminum phosphate. The presence of a very slight amount of these metallic phosphates prevents too rapid setting of the cement. Another question which should be answered before we can properly draw conclusions as to the superiority of artificial enamel is why the ordinary phosphate is so easily soluble in the mouth. I am told by many of you who have had practical experience that oxy-phosphate of zinc will dissolve in any mouth irrespective of the character of the saliva or of the care taken of the teeth. Further, the cement so situated as to come in contact with particles of food which may find lodgment and may subsequently ferment, will dissolve much more rapidly than if not so situated.

Many investigators have laid the fact of this solution entirely to the action of lactic acid and lactic acid is undoubtedly a factor in the destruction, not only in cement but also in many cases of the tooth substance itself. The theory advanced by Dr. Kirk some time ago in regard to the formation of lactic acid compounds of magnesium and calcium and the fact that these compounds may be discovered by the use of polarized light and indicates erosion due to lactic acid is, without doubt, sound theory.

The presence of lactic acid in the mouth is probably due wholly to processes of fermentation, in other words it is doubtful if lactic acid is a secretion of the salivary glands. Until very recently it has been claimed that lactic acid, acetic, butyric, or any other acid, except hydrochloric, found in the stomach was always due to fermentative processes. To-day the question is raised that possibly very minute traces of lactic acid may enter the stomach as a physiological secretion but no work, so far as I am aware, has been done to show that even this is true of the saliva. In view of these facts it seems to me that we have a right to look for

something else which may act as a solvent of oxy-phosphate cement. Dr. H. E. Cutter tests his cements by the action of ammonia water and I have to thank him for a suggestion along this line. Ammonia water easily dissolves oxid of zinc, the cement as it goes into the tooth is a basic phosphate and while it may be possible to use the exact molecular proportions to form a basic phosphate without any excess of zinc oxid, I believe that this very rarely happens in actual practice and that the great majority of phosphate fillings will contain more or less oxid of zinc uncombined, consequently if ammonia will dissolve oxid of zinc it is reasonable to suppose that cement containing even a minute trace of uncombined oxid of zinc will be attacked and disintegrated by ammonia.

Ammonia does not occur as such in the saliva; the alkaline reaction of the saliva is due to the presence of the disodic phosphate and possibly, according to Prof. Chittendon, to traces of acid carbonate of soda and to these two substances only is the alkalinity of the saliva due. The saliva does, however, contain ammonium salts, notably ammonium chlorid. Now ammonium chlorid has a solvent action upon zinc oxid, and will in a test tube disintegrate oxy-phosphates in much the same manner although very much more slowly than does the ammonia water. As suggested by Dr. J. E. Stanton, it seems to me that this fact may account for the disintegration of cements when so situated that lactic acid may be practically ruled out of consideration. Of course when lactic acid is also a factor, that is, when the cement is so situated that it is acted upon by the products of food decomposition, the dissolution takes place much more rapidly, the lactic acid being without question a much more energetic solvent of oxy-phosphate of zinc than is ammonium chlorid. Dr. Witthaus is authority for the statement that oxid of zinc is absolutely insoluble in neutral solvents but either this statement is at fault or else I have been unable to get pure oxid of zinc.

So much for the composition and disintegration of the old or ordinary oxy-phosphates. In regard to the new artificial enamel, we find that the patent specifications, under which one of these preparations is produced, claims that the powder consists of a mixture of oxids of beryllium, silica, aluminum and calcium and that the liquid is a 50% solution of phosphoric acid in which aluminum phosphate has been dissolved nearly to saturation and

then to which, a slight amount of phosphate of zinc has been added. I have made qualitative tests on one of these preparations and to a limited extent on a few others and believe that the specifications of this patent are faithfully carried out so far as the particular preparation which I examined goes. In the enamel, which I examined most carefully, and will call No. 4, beryllium oxid was found to be present in considerable quantity. Some time was consumed in the positive separation of beryllium from zinc. I find the books give various methods as to the separation of beryllium from aluminum, but it was some time before I could find a satisfactory method for the separation of beryllium from zinc, as it dissolves in the same solvents and its salts generally respond to the same reactions. The separation of beryllium was finally effected according to the following directions: Fuse a little of the powder with sodium carbonate (or the double sodium potassium carbonate); dissolve the fused mass in dilute hydrochloric acid; evaporate to dryness and heat to 120 C. to dehydrate the silica; take up in water with a little hydrochloric acid and filter; to the filtrate add a little ammonium chlorid and excess of ammonium carbonate. Aluminum hydroxid and beryllium hydroxid will both be precipitated, the latter compound will be redissolved in the excess of the ammonium carbonate; filter off the aluminum and the clear filtrate upon continued boiling will give a white flocculent precipitate of beryllium hydroxid.

Beryllium is a comparatively rare metal which has also been known by the name glucinum. It resembles aluminum in its physical properties and in its chemical properties lies between aluminum and calcium. It has a tendency to form basic salts much after the manner of zinc, and these salts have somewhat of the same properties as the zinc salts. The beryllium nitrate appears in trade catalogs in two forms, one water soluble, and one acid soluble. An ounce of water soluble was obtained, but it does not dissolve except with the addition of considerable nitric acid. Some of this nitrate of beryllium was strongly ignited in platinum with the resulting formation of sample of oxid contained in this vial. This powder, with phosphoric acid, produces a decidedly sticky mixture and this oxid undoubtedly plays an important part in making the artificial enamel sufficiently adhesive for dental use. Various artificial enamels, which have been sent me for comparative tests, have given very satisfactory results as regards their hardness and

their solubility. Some tests were made with the liquid of the enamel and the powder of the ordinary oxy-phosphate cement which gave practically the same results as when the ordinary oxy-phosphate cement was used just as when it was sold; that is, it seems to me, that these experiments show also that the difference between these two cements lies largely in the character of the liquid containing aluminum phosphate.

As I previously stated, my experiments have been very incomplete on account of lack of time, but, from what has been done, I believe that artificial enamels will be found valuable in so far as they contain beryllium. Other cements have previously been made containing silica and aluminum but have lacked the qualities of adhesiveness and insolubility which are possessed by these preparations. Of course, my opinion has been based simply on laboratory experiments. It has been claimed that some of these preparations do not wear smooth; I can easily understand that this may be due to the presence of silica which is not in complete chemical union and which is more resistant than the composition of the cement aside from it.

CEMENT.

PAPER BY R. R. ANDREWS, D. D, S., CAMBRIDGE.

If we read the signs of the times correctly, we shall find that in our profession the trend of thought, with many of the older members, is in the direction of using more conservative methods, in saving the teeth of our patients.

The long tedious operation of packing and condensing large cavities with gold, is with many men a thing of the past, and other methods, accomplishing the same results, are sought for, or are now in use. One of our more prominent dentists stated to me recently that he was not using as much gold for filling the teeth, in his practice, as he did a few years ago, and, as a result, he believed he had saved more teeth.

Inlays of porcelain, and of gold, and even inlays of celluloid, are now taking the place of gold foil for stopping large cavities, and as the permanency of these substitutes depends largely for their success on the manner of holding them in place within the

cavity, it is evident that the subject of *cement* becomes an important one for us to consider, not only from this standpoint, but also from its use as a filling material.

In an able article in the July Cosmos, for 1905, entitled "The Cement Problem in Inlay Work," by Dr. George C. Poundstone, of Chicago, he makes this statement: "Most dentists can, with care and perseverence, make a perfect inlay, exact in its shape, and beautiful in its shading, but what does that signify, if after a week, a month, or even a year, we find this work of art—if you find it at all—hidden away within some vase among the other family porcelains and jewels, or lying quietly in the corner of a pill-box in some upper bureau drawer."

"To keep the inlay in position in the cavity, without spoiling its original beauty, is the problem before us. What cement to use, is the question. Some cements will not stick; others expand, so that what at first appears to be a perfect joint is, after a day or two, a broad line of cement, while still others are permeated by the fluids of the mouth, micro-organisms, and debris, giving the inlay the appearance of being several shades darker than the tooth. Until we can procure better cements, the inlay cannot reach the high degree of perfection hoped for it."

Dr. Poundstone then shows the results of numerous experiments testing the fineness of the cement, under the microscope, and, after studying these tests, he states as a result of his research, "It is my belief that most inlays are retained in position solely by the retention form of the cavity, the accurate fit of the inlay, and the cement on the one hand, and the cavity wall and the cement on the other; and that, after a few days, there is a film of moisture between the cement and the cavity wall, and between the cement and the inlay, the cement acting merely as a key in locking the inlay into the cavity by means of its projections extending into the irregularities of the cavity wall on the one hand, and the depressions in the inlay, formed by etching or grinding, on the other.

This series of experiments made by Dr. Poundstone is not particularly helpful to those of us who need assistance in looking for good cements. He gives it to us merely as a statement of what was revealed to him by microscopical research work. Another paper in the same number of the Cosmos for July, 1905, entitled "Tests on the Inlay Cement Problem," by Dr. Joseph Head,

of Philadelphia, is much more helpful and practical for us. He goes into the subject in a practical way and, after making many tests by measuring the force required to dislodge porcelain pieces from cavities under various conditions, as used in practice, states as his conclusions: "That glazed or ground porcelain, cemented to smooth ivory, has but little power of adhesion from the cement, that a thin film of cement is not as strong a bond as a thick mass." He states that the edges of a filling and cavity should be in as close apposition as possible, but wherever feasible, the cement that holds the filling in the cavity should have body. He states that etching of porcelain with hydrofluoric acid is a valuable means of obtaining adhesion of porcelain with cement on flat, shallow fillings; yet undercuts are to be preferred where they can be obtained, and there is good reason to believe that the best results can be gained by both undercutting and etching the filling. Reduction of grit in the Harvard cement adds to the strength and power of adhesion. This is a law that may apply to all cements if they are not thereby made to set too quickly.

Recent literature has shown us that large numbers of inlays, both porcelain and gold, are being used by the profession, more today than ever before. We hardly realize the worth and importance of this method in treating the larger cavities. Some of the most beautiful work that I have ever seen has been inlays of gold in the bicuspid and molar teeth. I believe that Dr. Head's advice is valuable when he states that that portion of the inlay within the cavity should be somewhat smaller than the cavity itself, that the inlay should be etched and grooved and that the cavity should also be grooved. If we now can find a cement that has a translucent appearance, and will stand the secretions of the mouth without wear, then an inlay, either of gold or porcelain, becomes the ideal filling. The principle is correct, and I think that the time is coming when most of the large work will be done by this method. In a practice of over forty years I have had an average experience with cements, and fully realize that this material has a real value in saving teeth. It has been my practice for years to use it in the mouths of young patients as preparatory fillings, and I know its value here. Occasionally these cement fillings last for years. I have an inferior molar in my own mouth that has been saved by a cement filling, put in forty years ago. The filling, an oxy-chloride cement, is on the occlusial surface. The last mending by oxy-

chloride has done good service, without repair, for twenty years, though somewhat worn now.

Among the oxy-phosphate cement, the Harvard ranks among the best. Eisfielder's No. 7, a dark yellowish brown filling, used in the back of the mouth, has given some excellent results. Recently I have used the petroid improved, which I think is an excellent cement. Last May Dr. H. E. Cutter brought to me a sample of a new enamel cement, requesting me to try it and see what I thought of it. It proved to be Ascher's artificial enamel. I tried it, and thought I found it, in some ways, superior to anything that I had used. It seemed to have qualities that other cements lacked. I used at first cautiously, remembering experiences that I had had with other new cements, but now, after nine months, I am using it with increasing confidence, although not sure of its permanency. My experience teaches me to rank it as a higher and better grade of cement than any that I have heretofore used. It requires more care in working than other cements. In cases where others wash or wear out, Ascher's remains. Fillings placed in cavities nine months ago show no traces of wear, and this in places where the best of the ordinary cements would have worn badly in that time.

Ascher's artificial enamel, rightly mixed and placed, with proper shade, makes the most beautiful cement fillings that I have ever seen. The use of it is an art that conceals art. In appearance it is much like the tooth, vastly better than gold in this respect, and if it were not as good a preservative of the tooth as it promises to be, it yet has a strong claim. After its use patients have expressed a desire to have it used again, instead of gold, even if it has to be replaced in time.

There are several important points, experience teaches me, that should be used to obtain the best results with this material. Cavities should be prepared as though for inlays having retaining grooves, and the margins sharp and square. There should be no lapping over the edges of the cavity by the cement, or there will be chipping. My assistant mixes the cement to a consistency of soft putty with an ivory spatula. When thoroughly mixed, she passes it to me and I press it into place, using considerable force. In approximal surfaces I used glazed silk strips which have been smeared with vaseline. These I pass between the teeth against the filling, and try to force it further into place. The filling is so ad-

hesive that care should be used here. It will sometimes stick to the strips in spite of the vaseline, and this may start the cement from its hold. It should be kept from moisture for at least fifteen minutes. Results with me have been more than promising. I have used it in setting inlays in a number of cases, and if there is space between the inlay and the cavity, where this thicker cement can be used, I am led to believe that this is the cement that we need. It has a translucent appearance, and thus far seems to stand the secretions of the mouth without wear. To my mind it is one of the most promising cements that we have ever had.

A NEW FILLING MATERIAL.

HARRY E. CUTTER, D. D. S., CAMBRIDGE, MASS.

It was in April, 1905, that I first learned of the new filling material, Ascher's artificial enamel. Upon procuring a sample of it I inserted experimentally several fillings in the teeth of one of my assistants. These fillings closely matched the teeth in which they were placed, both in color and in enamel-like appearance, and the result was very satisfactory. I then obtained more samples, and at the next meeting of the Boston Society for Dental Improvement, which was held with Dr. F. G. Eddy, at Providence, in May, I distributed them among the members.

After this I inserted, from time to time, in the teeth of some of my patients a few fillings, telling them that it was a new material, and that while it had a good appearance I knew nothing of its durability, as it had but recently been brought to this country. I kept a special record of these fillings, separate from my regular records, so that my attention would be called to them when these patients came in again.

It is now (February, 1906) nine months since I first began using this material, and while this is not long enough for a thorough test, it has been gratifying to find that none of the fillings, which I have since examined, show any signs of dissolution, and many were in mouths where oxy-phosphate fillings would have begun to wash out within that time.

Being desirous, however, of learning directly of the experience of dentists in Germany who had been using the earlier material for some time, I wrote to Dr. Michaelis, of Berlin, and in reply received the following letter from Dr. Ascher:

BERLIN, 17th June, 1905.

Dr. Harry E. Cutter, Cambridge.

DEAR DOCTOR:—Dr. Michaelis, who passes at this time a season in Karlsbad, sent me your letter and, as I am the inventor of the material which you give your interest, I will try to answer your letter as well as possible for me.

1. A dissolution of the material is perfectly excluded if it is worked in a correct manner.

2. It adheres closely and forever to the sides of the cavity, but a carefully prepared cavity will render failure absolutely impossible.

3. For corners and cutting edges the material was until now not yet strong enough, but we have just now improved it and in a few weeks it will appear on the market.

Samples of the improved filling I sent to the prominent men of the profession in Europe six weeks ago gave splendid results in all cases of large contours.

As soon as the new preparation will be manufactured at large I shall send you a few samples and I am convinced the results you will get with it would give you perfect satisfaction.

Very truly yours,

HUGO ASCHER.

The material is exceedingly hard, in fact it is so difficult to cut, even with the sharpest burs, that in very deep cavities, where its removal may become necessary, a softer material should be placed beneath it. I have found that about the easiest way is to grind it with stones.

It should be thoroughly and carefully mixed and spatulated, gradually adding more and more powder until the mass is quite stiff and begins to stick and pull on the slab, when it is ready to be packed into the cavity with firm pressure. This is very important, in order to get successful results. The best spatulas that I have used are the double-ended bone ones, furnished by Claudius Ash & Sons. These, though broad and stiff, are more flexible and not

so brittle as the ivory ones and are also less expensive. A metal spatula darkens the material. If the spatula and mixing slab are at once dipped in warm water after a filling has been mixed, the material is easily removed, otherwise it is somewhat difficult to do so, especially from the spatula.

If a matrix is used, great care is required to carry the material to the deepest parts and edges of the cavity. It seems to be a little hard to force it into remote corners. It is desirable to make the cavities of a retentive shape, although the material seems to be quite adhesive. Large approximal or contour fillings in bicuspid and molar teeth should, if possible, be well-seated and anchored so that the force of mastication will not dislodge them, and they should be just clear of the bite when finished. It they are to replace oxy-phosphate fillings, a large part of the latter should be removed, in order that there may be more than a thin veneer of the new filling.

The material should be treated somewhat like porcelain; that is, always have, if possible, square and thick edges, and the fillings should be finished perfectly flush with the surface of the tooth, otherwise the thin edges overlapping the cavity will chip away afterwards. In finishing approximal fillings in the incisors I have used thin strips of photographic film lightly smeared with white vaseline on the glossy side. I hold the strip tightly against the filling and tooth and then slowly draw it *one way* to remove the surplus and make the filling flush with the surface of the tooth. This has to be done carefully, and just before the filling begins to harden so as not to displace it, as the material will stick to even a lubricated strip. This method was suggested to me by Dr. R. R. Andrews.

Even in an unpolished condition these fillings have an enamel-like appearance when wet with the saliva, quite unlike oxy-phosphate fillings. A glossy finish, however, can be obtained by burnishing repeatedly with an agate or steel burnisher, lightly smeared with vaseline, while the filling is hardening. This is particularly satisfactory in crown fillings in bicuspids and molars, a ball burnisher being used. I think that this burnishing also makes a denser and better filling. Keep the fillings dry for fifteen minutes or, after they have begun to harden, coat them with a solution of gutta-percha and chloroform, or smear them with a mixture of white wax, gum damar and resin, using a hot instrument, as recom-

mended by Dr. Loveland. Steel instruments tend to darken the fillings, but this is usually not objectionable.

If the teeth are carefully matched in color and the fillings are nicely finished, they will rival porcelain inlays in appearance, since they blend with the surrounding tooth substance with no joint lines about them. When hard the fillings have the characteristic feeling of porcelain when examined with an explorer.

There are ten colors, but a good selection might consist of No. 4, cream; No. 8, dark grey; No. 9, light grey; and No. 10, dark yellow. The shades are more likely to be too light than too dark when inserted in a tooth, and therefore No. 8 and No. 10 are very desirable, either to be used alone or to modify other shades.

There are similar preparations now upon the market, but so far as I have been able to learn, Ascher's artificial enamel is the original. It is protected in the United States by two patents.

In this material I believe we have been furnished with something for the filling of teeth which surpasses in appearance anything that we have had before, other than porcelain. It is easily manipulated and can be used in places where the extensive cutting, often necessary in using porcelain, would be avoided. If it is proved that this new substance is really insoluble and is in all respects permanent, then we have in this an ideal filling material.

Dr. William Y. Allen, Boston.—I have been greatly interested in the papers of Mr. Smith and Dr. Stanton, in which the chemical properties of this new filling material have been so ably discussed; but I shall not attempt to add to that phase of the subject except to call your attention to the fusible property of the cement, as shown in the specimen that I will pass around for your inspection. This specimen I mixed in the usual manner for a filling, and shaped it into the form of an incisor tooth. After hardening, it was placed in the electric furnace and subjected to the degree of heat necessary to fuse the S. S. White porcelain inlay bodies. The specimen is glazed and bears a strong resemblance to fused porcelain, with but little shrinkage.

My practical experience in the use of "Ascher's enamel" dates from a conversation that I had with Dr. Cutter last November, and to whom I am indebted for first calling my attention to this very interesting substance. Dr. Cutter's enthusiastic account of his own experiences in its use, during a period of six months,

impressed me so favorably that I immediately began to investigate its merits for myself.

One of my first cases was that of a patient for whom I had made an appointment to crown the root of a left superior first bicuspid. The entire palatal wall had broken away close to the gum margin, while the buccal wall, though very frail, was still intact and of good oppearance. With the patient's consent, I decided to try the experiment of building up the missing portion of the tooth with the Ascher filling material, and thus save, if possible, the natural buccal wall, which operation was successfully accomplished with the aid of a band-matrix carried well under the gum margin on the palatal side of the root. The result was highly satisfactory, both in the simplicity of the operation and in the natural appearance of the tooth, when the work was finished.* After two months of reasonable hard usage there is no visible sign of wear, even on the occlusal surface of the filling. Other cases where I have used this material show equally good, or even better results. So many are the excellent qualities of Ascher's cement that it now seems to be only a question of its durability to demonstrate whether or not a new era has begun in our methods of restoring carious teeth to usefulness and a natural appearance. That a distinct advance has been made in this direction there can no longer be a reasonable doubt.

NOTE: Six months after the above report the filling still presents the same good appearance.

The American Academy of Dental Science.

A regular meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, April 4th, at 6 o'clock.

President William H. Potter in the chair.

The subject for discussion was, "The Treatment of Pathological Conditions of Roots and Pulpless Canals."

The following papers were read:

CHARLES P. BRIGGS, M. D., D. M. D.

When asked to contribute to a discussion of "root treatment," after a good deal of demurral I consented, not because I can speak as one having any especial reputation or success in such

treatment, but in order to contribute my little part to the success of the meeting.

I have no new idea to advance, and propose briefly to tell you what has seemed to me the best treatment to employ under the different conditions that arise.

The simplest case, it seems to me, is that of a vital tooth, having no exposure of the pulp, which, for one reason or another, it is necessary to kill. In such a case admission is gained and the pulp paralyzed by means of the so-called "pressure anaethesia" using either unvulcanized rubber or a powerful syringe, working through a drill hole made by a No. 1 bur into which the syringe, without packing of any sort, fits sufficiently tight to prevent any escape of the cocaine. If the canals prove to be reasonably patent the chances are the very best for future success. The canals are eseptic, hemorrhage is slight and, if present, is easily controlled by chloride of aluminum which, with me, has always proved to be the most powerful styptic. To make sure that no infection takes place, a little time, and very little, is spent in washing with absolute alcohol to abstract moisture, in drying, not so carefully as later, in washing with tricresol and formalin, of which I shall say more presently; in drying again, and now most thoroughly, for upon the degree of thoroughness with which this final drying is done depends, in a great measure, the ultimate result, in all cases of root filling.

Here let me digress for a moment to remind you of an interesting fact. When working on a tooth, in somewhat the above way, when one has seen the pulp down to its finest termination curling as it dies on the Donaldson broach, one is sometimes surprised on pushing up a cotton-wound broach to dry the canal, to get an expression of acute pain that makes one wonder whether, by any chance, a bit of pulp remains. Persisting in the effort to dry, the pain is gone and one may vigorously prod without causing any sensation. I did not realize how acutely painful a little moisture could make a tooth until I had the experience in a tooth of my own.

When the canal is thoroughly dried, so that the cotton on the broach leaves no mark on a piece of rubber dam, I fill with a paste of gutta-percha and hydronapthol, followed by a cone of gutta-percha.

In teeth devitalized in this way, it is almost always possible,

with the finest (and, by the way, I always use a new broach for this purpose) barbed broach, thoroughly to extract the pulp from the canals that would be classed as impenetrable were the tooth one that had been dead and septic for a long time.

Adrenalin combined with cocaine in this procedure does not seem to me to be of any advantage. It is often desirable to have a little bleeding to locate very minute branches of the pulp.

Success in the treatment of a tooth already dead; and more or less septic, is a matter of sterilization. For me, the very best antiseptic is a combination of formalin and tricresol as recommended by Dr. J. P. Buckley, of Chicago, in a paper read at the fourth international congress, 1904, and printed in the "Cosmos" of February, 1905, in which he gives a very interesting account of the chemical changes that take place in the disintegration of the pulp, and of the reaction between the products of decomposition and this combination.

If there is no pus formation present and no tenderness to pressure, I wash alternately with alcohol and the tricresol-formalin. Then, if the canals are not easily penetrable I enlarge them as best I may: in some cases with sulphuric acid, full strength followed by sodium dioxide, in other cases by means of the Beutelrock drills used in the Davis handpiece, beginning with the smallest size, which as you know is as fine as a hair. It sometimes happens that the drill breaks, but the break is always next the handpiece. It has, thus far, always been the matter of a minute to extract the drill, a marked contrast to the hours spent and sometimes vain attempts to extract drills with the enlarged heads like the Gates-Glidden.

When the canals are enlarged as much as seems possible or advisable, I wash again with the alcohol and tricresol-formalin alternately (an excess of tricresol is converted by alcohol into lysol, itself a good antiseptic) dry most carefully and fill as before, with gutta-percha dissolved in chloroform, hydronapthol and gutta-percha cone, provided, always I am reasonably sure that I can carry my filling to the apex of the roots.

If there seems to be no chance that I can do so, as happens in a small minority of cases, I fill the pulp chamber, and the lower part of the canals with one of the antiseptic mixtures in use, paraform and tricresol or a paste of tricresol-formalin and oxide of zinc.

My feeling, however, that the dead will more surely rest in peace if I am able to fill the canals with gutta-percha. If there is pus formation or evidence of pericementitis or if a fistula is present, I treat the tooth one or more times with tricresol and formalin ensealed with gutta-percha. It is surprising how almost unfailingly a tooth treated in this way loses its malodor and sensitiveness. After such treatment I fill as before and expect successful result.

I wish I could give a record of unfailing results, but it occasionally happens that a fistula does not heal or, a more regretable fact, a tooth has been known to remain in good condition for a time and then develop trouble, with perhaps a persisting fistula, or a fistula develops through a sub-acute process accompanied by little or no pain.

In such cases, I assume, at first, that the sterilization has not been successful in reaching the focus of trouble which is now outside the tooth. I wait hoping that the efforts of the tissues to repair themselves, after drainage has been secured, will be successful, assisting by an occasional probing with chloride of zinc fused on a platinum wire of gauge No. 30.

In some cases it has been concluded that treatment inside the tooth has not been thorough and a second cleaning of the tooth, by the Beutelrock drill, followed by second sterilization and filling has been followed by a cure.

I read of root amputation, re-implantation and cataphoriesis, using the cathode at the gum for these intractable cases. With me the percentage of failure has been discouraging. I mention these procedures in the hope that I may learn of their use in the hands of some of you.

Before closing, I could add that of late I have seemed to find benefit in directing patients, and I now do it in all cases, to rub on one of the combinations of iodine and oil, like Wyeth's "petrogen" into the gum, above the tooth, two or three times on the day following the filling of a root canal. These combinations do not stain and do not blister and are said to stimulate the phagocutes to increased endeavor to destroy the morbific bacteria.

PATHOLOGICAL CONDITIONS OF THE ROOTS OF TEETH.

GEORGE T. BAKER, D. D. S., BOSTON.

From time immemorable pathological conditions of the roots of teeth have been a source of pain and suffering to man, both civilized and savage. An examination of the skulls of all races, ancient and modern, furnishes evidence of this fact. Doubtless the chief cause has been dental caries, but even where there has been no caries, mechanical abrasions, caused by mastication, have so worn the teeth that in time the sensitive dentine has been exposed, and repeated thermal changes and pressure havs caused inflammatory conditions and eventually death of the pulp. This almost invariably has resulted in bacterial invasion and decomposition of pulp tissue. There are exceptional cases where natural mummification has taken place after the pulp has died, but being rare and exceptional they will not be considered.

Usually the death of the pulp is followed with complications involving the peridental membrane. The symptoms are so well known that it would be superfluous to dwell upon them. In most cases there is sensitiveness to pressure, heat, redness and swelling over the root of the affected tooth, accompanied with more or less pain, followed by the formation of pus. More or less disturbance of the general health follows, until the confined pus is discharged. The usual result is a fistula through the buccal or labial alveolar process and gengival tissue, opening into the mouth directly over the root of the tooth involved. In some cases it may be some distance from the affected root, in other cases it may be upon the cheek—in still others, it may be under the chin, as when the lower incisors are involved. Again it may discharge in the antrum or down the outside of the tooth, following the peridental membrane directly into the mouth. Again it may result in an elevation of the alveolar process, forming a hard, round, bony tumor, while in other cases the osseous tissue (owing perhaps to absorption), may be soft and crepitating.

In some cases reflex neuroses may be the result, giving rise

to neuralgia, pain in the ear, the opposite jaw, the eye or other parts more distant. Or, again, the pus may not be discharged, but may be absorbed into the system, resulting in pyaemia, septicaemia and possibly death. The more serious cases usually arise from affections of the permanent teeth—though the temporary teeth may be the aggravating cause. Doubtless the same causes in different persons or in the same person at varying times may bring about different pathological conditions.

These conditions may best be met by treatment depending upon the individual case, but there is one principle which I believe should not be lost sight of, and which applies to each and every case, viz.:—the cleansing and disinfection of the tooth —not alone the pulp chamber and root canal, but the whole substance of the tooth, including the canaliculi of the dentine, as far as the infection has penetrated.

In order to do this it is evident that something more than mere instrumentation is necessary—chemical means must be employed, and it seems clear that gases should be employed rather than liquids or solids, for they are more penetrating, and by slow diffusibility gradually and permanently penetrate the minute and inaccessible canals.

Formaldehyde seems to be the most adaptable remedy. It is a reliable disinfectant and germicide, non-staining and of not unpleasant odor, but used alone it has two objections—first, it is irritating; second, it is very volatile. Both are serious objections, but can be overcome by combining with another drug. If it can be combined with a drug that will render its action slower and more permanent we will have an ideal agent. The phenols, including carbolic acid, creosote, guaiacol, as well as triresol, are all objectionable on account of their persistent disagreeable odor, but thymol seems to be just what is wanted. It is like formaldehyde, composed of C H and e O—thchemical formula being C_{20} H_{14} O_2 —while formaldehyde is C H_2 O.

It seemed difficult to combine thymol with formaldehyde, but it was finally accomplished. The combination seemed ideal for the purpose. It presented in the form of a crystalline mass, nearly white in color, neutral in reaction, slightly soluble in water, freely soluble in alcohol or the essential oils. It was mixed with zinc oxide in the proportion of a 5% compound, and this powder was mixed as a paste, using glycerine with 5% thymol in solution as a

menstruum. The combination was then found to be an unctious mass, white in color, very slightly soluble in water, which allowed it to be used in cases where it was impossible to apply the rubber dam. It was possessed of the combined odor of formaldehyde and thymol. It was used as a dressing for disinfecting foul pulp canals and apparently rendered them sweet and clean—being sealed in for from one day to a week. Later it was tried in cases of chronic deuto, alvealar abscess with fistula, filling root to foramen and in the great majority of cases the fistula disappeared within a limited time.

In cases of blind abscess cures were effected apparently by resolution or absorption after the pulp chamber had been lightly filled with the dressing, the time varying from a week to a month. Some obstinate cases of this class were cured after being abandoned as incurable by other methods. Cases where there were bony tumors in the apical region yielded when roots were filled with this dressing. Temporary teeth were treated, and pulp chambers filled, leaving roots empty. In such cases the gums assumed a healthy appearance, and fistulae disappeared. These cases were watched and always the process of shedding and erupting proceeded favorably.

It has been used as a mummifying agent in both the permanent and temporary teeth, removing the pulp from the chamber and, without entering the roots, filling the chamber and tooth at once. It has been used when the root has been found perforated —sealing the perforation with gutta-percha and filling the pulp canal as usual.

Sometimes, like everything else, it will fail, but in the great majority of cases it will disinfect, sterilize and render the once septic pulp canal aseptic, and thus by removing the cause, effect a permanent cure.

The New York Institute of Stomatology.

A meeting of the Institute was held at the Chelsea, No. 222 West 23rd Street, New York, on Tuesday evening, May 1st, 1906, the President, Dr. S. E. Davenport, in the chair.

The minutes of the last meeting were read and approved. The President called attention to the fact that the members of the Institute were invited to attend a reception to be given in honor of Dr. Jacob L. Williams, of Boston, by the American Academy of Dental Science. Dr. Andrews, of Boston, who was present, was invited to say a few words regarding this matter.

Dr. Andrews.—Dr. Jacob L. Williams, of Boston, one of the oldest and most prominent members of the profession there, has been ill for some months with a complication of troubles. He has suffered a great deal from rheumatism, and was recently operated upon for cataract of the right eye. The operation was unsuccessful, and he lost his eye. He is the oldest member of the American Academy of Dental Science, and the members thought that it would be a graceful tribute to Dr. Williams to give a reception in his honor, presenting him with a loving cup. They hope to make it a pleasant and successful occasion.

Dr. F. Milton Smith moved that there be conveyed to Dr. Williams on this occasion the kindest feelings of the Institute and its appreciation of the interest Dr. Williams has always taken in the best things in dental science.

Motion seconded and carried.

Dr. G. S. Allan.—Though it is a little late in the day I wish to call your attention to an article in the *Dental Digest* for February, 1905, having the suggestive title "Dental Poverty." It deserves a little more than passing notice. In the body of the article will be found the following: "You are poverty-stricken in this phase of dentistry unless you have a system of rapid and painless operations. Love and appreciation cannot be inspired by the protracted use or abuse of clamps, separators, and rubber dam. The good dentist cannot be constituted of good results alone any more than the human body can be made of water entirely, although its

chief constituent is that element. Good results procured by speedy, painless and comfortable operations are what make the true, scientific dentist."

In the discussion will be found: "The essayist struck the keynote of the whole thing when he said, 'Good results secured by speedy, painless and comfortable operations are what make the scientific dentist,' and he should have added, the appreciated dentist. If we are not going to be poverty-stricken we must give high value. When a man tells me that the public does not appreciate dentistry I simply say he does not know, for the public will express appreciation. A successful operation is only ideally successful when it is perfect from the standpoint of mechanical operation and free from pain to the patient."

Ohio is a great and progressive state. The Northern Ohio Dental Society undoubtedly fairly represents the best elements of the profession in the state and without question they are men of ability and standing who are earnest in their efforts to advance the profession and uplift its members. Yet we look in vain for one word of protest or exception from any member present as explanatory of or excusing the remarkable position taken. What inference can we draw from all this. I frankly acknowledge I do not practice painlessly. There is nothing professional I crave more than the ability and knowledge to enable me to do so, but it is beyond me. Moreover, unless I am sadly in the wrong, outside the dental parlors, in the East in the membership of the societies I am either connected with or know something of, painless dentistry is still a something hoped for, but hoped for only. What is the meaning of this? Can anyone answer the question? Can any man rise from his seat and say I do practice painlessly? I leave the question with you for solution.

The President.—We shall have the pleasure this evening of listening to a paper by Prof. R. R. Andrews, of Boston, on the subject of the formation of the teeth and the reasons why the enamel is so often defective or deficient.

(For Dr. Andrews' paper, see page 165.)

The President.—Dr. Andrews' paper has proved both interesting and valuable, and is now open for discussion. Dr. Andrews has illustrated his paper with a most beautiful collection of slides, many of which were prepared by him. This subject has a practical bearing upon our work, and if there is any gentleman here

desirous of discussing the paper I trust he will not hesitate to do so on the ground that he has not studied with the microscope as fully as has Dr. Andrews. Dr. Andrews has shown us the process of the encroachment of decay upon sound tooth structure and has given us an object lesson of the danger of allowing decay to remain in a tooth. He has proved to us that our duty to our patients, especially to the younger ones, is to make the most rigid and thorough examinations possible. I will ask Dr. E. A. Bogue to kindly open the discussion.

Dr. E. A. Bogue.—Dr. Andrews has very generously responded to the request of the executive committee. The development of the teeth and the formation of the enamel is so intimately connected with the well-being of the child that I think a very good prognosis of the life power of the child could be based upon it. After the exhibition we have had to-night we can understand how the cutting off of the blood supply will bring about the results of defective enamel that we have seen. We should see to it that mal-nutrition from bad food and insufficient exercise are provided against.

The President.—Dr. Andrews had something to say about the difference between tubules and canals in the dentine. I hope he will be kind enough to explain this difference to us more fully.

Dr. F. L. Fossume.—Is not this cutting off of the blood supply a local condition, and, if so, can it not be relieved?

Dr. C. O. Kimball.—I would like to call attention to the emphasis Dr. Andrews' paper brings to bear upon the practical side of our work; that is, in the care of children's teeth. The slides that he has shown us emphasize the absolute necessity of a most careful and rigid examination of the fissures of every tooth as soon as it is erupted, for in these fissures lies the point of danger. Later on in life the action of bacteria may cause a breaking down of the tooth at the approximal point, but that is a different condition entirely. The defects of development in the crowns of the teeth may so readily be remedied and with such lasting results that it is a great help to be shown how quickly serious results may occur from neglect. I wish to thank Dr. Andrews for what he has done for us to-night.

Dr. J. Morgan Howe.—I wish to express my gratification and my obligation to Dr. Andrews for this beautiful exhibition and

explanation. I would like to ask him if his studies of dental tissue have led him to any conclusions regarding the relative density and hardness of different specimens of dentine and enamel; if, by his microscopical examinations, he has been able to determine whether the tooth of one individual is harder or less hard than that of another.

Dr. Andrews.—I do not think you can tell by the microscope whether tissue is harded or softer. Of course, the relative hardness would depend upon the proper calcification.

Dr. L. C. LeRoy.—Regarding the statement made by Dr. Kimball, apparently to the effect that the fissures of the teeth of children seem to give us the most trouble. This has not been my experience. I worry most about the interproximal spaces. I would like to ask Dr. Andrews if there is ever any evidence of arrested development on the roots of teeth, the same as he finds on the crowns.

Dr. Kimball.—Iwas referring to the tooth immediately after eruption. I think that I mentioned that the trouble in the interproximal spaces begins later on, and it is in these spaces where the greatest amount of our work lies, but I was grateful to Dr. Andrews for showing us the importance of recognizing the defects in the newly erupted crown surfaces which, if immediately repaired, give us no subsequent trouble.

Dr. Ferris.—After this exhibition to-night of scientific facts, and the showing upon the screen presence of bacteria in the tubuli of vital teeth, I can not resist mentioning the prophylactic work of Dr. D. D. Smith and what he is doing for humanity. After examining thirty of his patients, one cannot but marvel at the results of his untiring labor, and I think that the duty of every one of us is to combine the work of these two men, one from the scientific, and the other from the clinical standpoint, and profit by their teachings to the benefit of our patients.

Dr. H. L. Wheeler.—It has been the most clear and precise statement of this subject that it has ever been my privilege to listen to. I feel that I know more about the subject than I did before. The paper has impressed me with the lack of scientific knowledge in the dental profession. It should be our first duty to prepare ourselves to teach our patients how to avoid these conditions of faulty nutrition. We spend a great deal of our time talking about mechanical problems, but there is something more to be dealt with in

our work. If we go home with a desire to improve ourselves along these lines I think this paper will have accomplished a great deal for us.

Dr. Andrews.—Let us for a moment consider what a tube is. We find it defined as "a pipe, a hollow cylinder, having inner and outer walls." What we find within the dentine are not pipes, they are little channels, that we call canals. Within these canals, nearest the fibre, the tissue is not wholly calcified, but is in a transition state that may calcify later. It is not a seperate tissue, but is an uncalcified part of the calcified dentine. There are no outer walls. If we use strong acid, the uncalcified tissue, (which, in this transition state, is called calco-globulin) is not acted upon by the acid, while the calcified tissue is eaten away. The uncalcified substance around each fibre is left, looking, under the microscope, like thousands of tubes, but they are not tubes in the normal tooth dentine, and only made to appear so by acid de-calcification. As a usual thing, the precautions necessary to prevent disturbances in nutrition during dentition are in the hands of the family physician, rather than in the hands of the dentist. Inflammatory processes are the result of disease.

I have found beneficial results in cases of deficient enamel by filling the irregular cavities, or surfaces, with some sticky cement. In time this can be ground down somewhat, and the gentle irritation of the dental fibrils will cause a protective growth, which increases the resisting power of the dentine against decay.

Adjourned.

NOTICE!

THE allied societies extend the distribution of the present issue beyond their own membership to a selected list of representative dentists who are presumably in sympathy with independent journalism.

It is hoped that those who receive THE JOURNAL will aid it by subscription and by promulgating the ideas for which this journal stands amongst their local societies. Please inform Dr. F. L. Bogue, 63 West 48th Street, New York City, of any change in address.

The subscription price of THE JOURNAL has been reduced to $1.00 per year.

The New York Institute of Stomatology.

The regular meeting of the Institute was held at the Chelsea, No. 222 West Twenty-third street, New York, Thursday evening, May 31st, 1906, the President, Dr. S. E. Davenport, in the chair.

The minutes of the last meeting were read and approved.

The President congratulated the Institute upon the election to active membership of Drs. George Emery Adams, Arthur H. Merritt and Karl Chapin Smith, all of whom were sure to prove active workers for the good of the Society.

COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. H. W. Gillett.—I would like to mention that I have received word from Dr. Sharp of San Francisco, one of the dentists there who has lost everything, that any instruments that have become useless or for any reason are not needed here will be welcomed there at this time.

The first thing I wish to call your attention to is a syringe that I have found useful in the treatment of cases of pyorrhœa alveolaris. About four years ago Dr. Eames suggested for the placing of treatments in pyorrhœa pockets, a syringe in which he used a vaseline mixture, with the idea that the effect would be more lasting. Later Dr. Wheeler talked about acetezone for this purpose. I found this very effective, but I disliked his means of getting it into place. I therefore was led to adopt Dr. Eames' idea so far as the syringe is concerned, mixing the acetezone with vaseline at the time of use. After mixing it must be used within fifteen or twenty minutes.

(Dr. Gillett exhibited the syringe that he uses for this purpose, which was so constructed that it would not corrode and could be easily cleaned.)

Some time ago Dr. Fossume spoke of the use of "Formalin" for controlling the sensitive spots at the necks of the teeth that are sometimes so troublesome. At that time I questioned its safety, but since trying the method I have found it so satisfactory that I wish to speak of it at this time. The "Formalin" should be

used full strength and it must be kept away from the gum. A very short application is sufficient to control entirely a very large proportion of these cases.

Dr. Gillett also exhibited some diagonal chisels for preparing cavities for gold inlays.

Dr. H. L. Wheeler.—I think Dr. Gillett's suggestion of mixing the vaseline with acetezone may be a good one. I had not supposed it possible to use it in this manner inasmuch as the chemists who prepare it suggest that it be left in water for fifteen or twenty minutes before using.

The President.—Our essayist this evening is known and loved by all of us. We are fortunate in being able to secure this paper of Dr. Bogue, as his writings are much in demand. Dr. E. A. Bogue will now speak to us on the subject, "Theories Made Facts."

(For Dr. Bogue's paper, see page 180.)

The President.—Theories made facts, gentlemen. Our essayist seems to have proved the position he has so persistently occupied before this Society for several years, that it is better to anticipate trouble and prevent it than to wait till the trouble comes. Dr. Bogue's paper is now before you for discussion.

Dr. R. B. Stanley.—I think we have listened to a remarkable paper this evening and one that will be much quoted. It would seem to me that this demonstration of the possibility of assisting nature in the development of the bones and sinuses of the face and the nasal passage is the greatest argument possible against the extraction of teeth for the purposes of regulating.

Dr. C. E. Quimby.—I wish in the first place to disclaim any special reputation as a rhinologist or of having any special knowledge upon the subject discussed by Dr. Bogue. However, it is of great importance and was first brought to my attention about ten years ago. As we go about the street we recognize that no two men look alike. One has a long nose and another a short one. One a big mouth and another a little one; and we accept these conditions as "natural." Yet in our scientific work we have made very little application of this knowledge. When a child is born with a hare lip or a club foot we do not hesitate to say that it is a developmental defect; but we have entirely failed to recognize the partial failures of Nature. An experience of my own, which, by the way, was a pure accident, may be of interest in connection with the points made by Dr. Bogue, in showing that the

correction of these cases may affect not merely the teeth, but the nasal passages. It happened to me some years ago to have a daughter who, during her second dentition, developed the habit of mouth breathing. With a parent's stupidity I scolded her, telling her to keep her mouth shut, and trusted to Providence that it might pass away. As this did not occur I examined her later and found the septum badly twisted and of course I said to myself: "Some day saws and chisels in this little girl's nose;" but I let it go from day to day until it ran over a year, when a rapidly increasing irregularity of the teeth suddenly forced me to admit that something must be done at once to save her beauty. After consulting one or two dentists and receiving advice that did not satisfy me, I determined to make the change in her teeth myself. The lateral incisors were back of the centrals and set under them for about half their width. I went upon the theory that in order to get room for these teeth the arch must be spread, although I had been told that I must not separate the maxillary bones. I adopted as my method of spreading the arch the jack screw as being the most effective and best under control. One day she came to me saying that there was something in the roof of her mouth and asking what it was. She said it felt like a cut. I examined and found that the bones had been separated. Then I was ready to move the teeth, which I did by means of different applications of the force of the screw. A little later she came to me asking how it happened that she breathed so much more easily. Taking her to my dark room I found that the septum had slipped into its position between the maxillary bones and that it was perceptibly straightened. In the separating of the arches there had been a broadening of the nasal cavities and a mouth breathing child has been changed into one who keeps her mouth closed in breathing. No number of similar cases or deflected or distorted nasal septa are of developmental origin and can be corrected by manipulation of the maxillary bones. But one such case does prove that there may be others, and compels us to recognize the possibility of their cure by manipulation instead of mutilation.

Dr. R. C. Newton.—Nothing could have been brought forward that would have been of more interest than this. Dr. Bogue seems to be on the right track. He has already done more for humanity than he realizes. There is no question that the professions of dentistry and medicine need each other's help, especially along these

lines. I have lately read a lecture by Dr. Harry Campbell of London. Dr. Campbell lays great stress upon the fact that irregularity of the teeth is a result of the non-development of the maxillary bones due to a great extent to the fact that children are not made to chew. The trouble begins with the nursing bottle, from which the milk comes easier and faster than out of the breast. This is followed by food too well prepared, leaving little necessity for effort on the part of the child in mastication. He says that if a child is made to eat properly it will get a much better width of jaw. However, he does not perhaps take quite as broad a view as he ought. I mean that all of the narrow jaws and overlapping teeth are probably not due to the lack of proper mastication in infancy and childhood. The fact that a child is bottle fed presupposes a deficiency on the part of the mother; and there are other powerful factors in the production of the misshapen jaws and defective teeth, unfortunately so common, beside the fact that we live in what Dr. Campbell justly styles the "pap-fed" age.

Dr. R. H. M. Dawbarn.—This is not a new subject to me, thanks to Dr. Bogue. I have merely come to witness his triumph. There has not been a year in the last ten in which he has not taken occasion to teach me on this subject. Of course the whole matter of practically altering dental occlusion is entirely out of my line; nevertheless, I am actively interested in a topic so important to oral scientific advance. I think Dr. Quimby is the only physician in New York who would have taken hold of that matter and carried it through as he did. At the time when he attempted it, physicians and dentists did not understand the question as now some of them do. He says that the dentists to whom he went for advice did not give him the assistance he required, and so he was obliged to take hold of it himself. That could not to-day be true, were he to ask for advice in the right quarter.

Dr. LeRoy.—Will Dr. Bogue tell us how long these appliances are allowed to remain in position?

Dr. Ferris.—Is there any indication of an earlier absorption of the deciduous teeth under the pressure of these appliances?

Dr. Bogue.—Dr. Quimby's little girl left off her appliance too soon. He is not the only orthodentist who has made that error. We come together to relate our failures. I have been during past years unfortunately obliged to tell a number of my patients that I have made failures, and that is not a pleasant thing to do.

It is fifteen or twenty years ago that the question was asked, "How long must teeth that have been moved be held in position in order that they will stay where they are put. That question has remained unanswered all these years, but to-day the answer is easy. If the teeth are moved into the position that Nature intended them to have, they will stay there, because of the occlusion of the cusps into their proper sulci in and among the antagonizing teeth of the opposite jaw.

Dr. Quimby disclaims any knowledge on this subject, but it is my opinion that he knows a great deal more on the subject than some of us. He spoke of the teeth loosening so quickly that he was frightened. We have all seen that and perhaps have been frightened at one time or another. I find that a slight pressure, steadily applied, will accomplish the greatest results with the least disturbance.

I was delighted to hear sustained theories that I have long held, that the nasal septum may be straightened out by this process. I trust Dr. Quimby will examine further and see if other changes do not take place.

Dr. Ferris asks if I find any absorption of the roots of the temporary teeth. We are trying to find out just when the roots of the temporary teeth are due to be absorbed. Nobody seems to know. I do not know if the absorption is any more rapid or not, but I think not.

Dr. LeRoy asks how long the appliances are to be left in position. Until the temporary teeth tumble out, and there is no longer any use for an appliance, if the permanent molars are in correct occlusion and the distance between them and the incisors is sufficient.

Dr. LeRoy.—But do you not sometimes attach these appliances to the six-year molars?

Dr. Bogue.—I expand the arch for children by means of the temporary teeth and having expanded it, I must needs keep the permanent molars apart.

Dr. Campbell is right. If a vast majority of people could bring their children up to chew hard things, these children would have better developed teeth and better teeth.

Dr. Kimball.—It does not seem to me that these teeth would go back even if the appliances were taken off leaving the first molar and central incisors only. Nature does not work backward.

Dr. Bogue.—I am almost convinced Dr. Kimball is right on this point and I had a little lady in my chair to-day who illustrated just this condition.

The President.—We are all very grateful to Dr. Quimby and Dr. Newton for the assistance they have given us to-night and we trust they will meet with us often in the future.

Adjourned.

FRED L. BOGUE, M. D., D. D. S.,
Editor The New York Institute of Stomatology.

PUBLISHERS' ANNNOUNCEMENT.

Commencing with its next issue The Journal will accept advertisements of standard preparations and appliances from reputable houses throughout the United States.

The high character of The Journal makes it an exceptional medium for such advertisers.

Rates and full information regarding circulation and territory covered will be sent upon request.

Address H. M. FRIEND,
Advertising Manager,
Orange, N. J.

THE JOURNAL

OF

THE NEW YORK INSTITUTE OF STOMATOLOGY
AMERICAN ACADEMY OF DENTAL SCIENCE
HARVARD ODONTOLOGICAL SOCIETY

AND THE

METROPOLITAN DISTRICT

(MASSACHUSETTS STATE SOCIETY)

Vol. I DECEMBER, 1906. No. 4

"NOBLESSE OBLIGE"

Tempora mutantur, nos et mutamur in illis.

This truism holds good the world over. During the last ten or twenty years there has been a marked movement in the status of the profession at large and of its members. We have all felt its influence, but not in the same way. Some have taken it lightly, some seriously, some indifferently, but all accept the fact and use it as their nature, education or ambition leads them. To many, the movement seems to have no meaning other than an anti-trade journal spirit. This is a great mistake. The protest against trade journalism is but one phase of the question whose real significance extends far beyond that of a purer professional literature, important as that may be. As the far-sighted and sound thinkers of the profession see it, the movement may be called the entrance of Dentistry into its birthright. We are awakening to the fact that dentistry is a special branch of Medicine; that he who practises Dentistry practises

Medicine in the full meaning of the term, and that as a practitioner of Medicine he must accept, with the honors and emoluments of his calling, his full share of its responsibilities and sacrifices. As with the physician and the surgeon, the obligations the dentist takes upon himself are two fold: Things to be done, and things not to be done.

Whether of this country or another, the "tie that binds" the professional man and differentiates him from every other class of men, is the same the world over. "Every man is a debtor to his profession," said Bacon; and those two French words which have become a part of every language, "*Noblesse Oblige,*" forcibly express this indebtedness of every one who has attained prominence in any profession. Originally applied only to nobility of birth, meaning that those of noble birth ought also to be noble in action, they equally appeal to all true nobility of mind. To say *Privileges bring obligations,* would perhaps more accurately express their meaning, as we are now using the words.

Dentistry is one of the noble professions sharing with medicine the high function of alleviating human suffering and prolonging life. A profession whose aim is the improvement of human life is bound to higher ideals than those of the merchant or tradesman, whose business, however noble-minded and public-spirited the man, is, in the end, the bartering of merchandise. And it is fitting that professional ethics forbid the publishing of the proceedings of our meetings, our papers and discussions, in trade journals, whose primary purpose is to exploit the sale of merchandise. While these journals are glad to publish to a certain extent the proceedings of our meetings, the papers read and the discussions brought out by them, the fact remains that they are trade journals, and this makes it impossible that the view-point of their editors should be the same as our own. Advertising in periodicals or otherwise is the recognized and legitimate method of the merchant, who endeavors

thus to bring his wares to the attention of buyers. But advertising, as a means of personal advancement, is frowned upon by every man of standing in professional life.

The trade journals have their purpose and use, and this journal of ours, also, has its purpose and use. The two may coincide at various points; the use and purpose of one may at times run parallel with that of the other. But the aims of the two are vitally different, and each will serve its own purpose better by being distinct from the other. Does not the spirit of *"noblesse oblige"* withhold us from the one and appeal to our highest ideals in the other? With increasing knowledge and expanding powers we are rapidly entering into a wider field and a greater trust—blindly it may be to many but a power greater than we perceive, the law of professional development, is urging us onward, and sooner or later it will force us to accept the inevitable.

Admitting that an organized Association of workers is of the first necessity to secure the best results, we meet the question of the conditions and auspices under which they are to be brought together.

Naturally this raises the question, why not appeal to the Colleges and Journals at present existing. The answer is that neither the colleges nor the journals are fitted for the work, for each and all of them are wedded to existing conditions and cannot take to the new without first discarding the old. It is only necessary to mention this objection to see that it is fatal to the birth and progress of the new ideas. If, therefore, these are to be vigorously prosecuted, new institutions, especially organized to put the new ideas into effect, are necessary. Hence this society and the new methods that we advocate.

Ours is not a negative or *anti*-movement only; on the contrary, it is positively and essentially a *pro*-movement. It is negative only as it opposes evils that with age and custom have put us in a false position and hamper our free growth along better lines.

As we have developed gradually, it has been forced on us that the clothes we wear and the houses we live in are not what we want. With new aims and objects we can only gain a position to make the most of our new life by radically changing our environment.

Recognizing the value of associated effort as giving greater power, we combine to accomplish our purposes more quickly and effectively. With trade journalism we have nothing in common, and, therefore, we abandon it as we would a worn-out suit of clothes.

Further the idea that this is our whole object is belittling to the larger cause we advocate. Tho its importance consists simply in helping us to get rid of drag on our efforts—the shackles we wear for the benefit of those who, whatever else may be said in their favor, have surely an axe to grind—yet even this is but a side issue. What we have to do is to foster the growth of the true professional spirit, to aid the advance toward the goal of the highest professional status.

Our profession has been exploited by the depots as a means of advertising their wares; and long use and custom have made too many of us indifferent to the false position in which we were placed, or blinded our eyes to the facts of the case.

The depots have placed the profession under very heavy pecuniary obligations, and they are ever ready to demand return favors —not in kind, but in trade. None the less does this tend to subordinate the editorial department of the old journals to the pressure of trade demands. We demand an absolutely free literature under our own sole professional control.

This Journal and these Societies founded on the principles it advocates, are the efficient means to the end. Educational they must be—leaders to the new life they surely are. As these journals and societies increase and multiply, the questions that vex and the difficulties that worry to-day will vanish, and our future

progress, along the lines and by the principles I have tried to indicate, will be assured.

GEO. S. ALLAN.

CANCER IN AND ABOUT THE MOUTH AT THE BOSTON CITY HOSPITAL.*

By David D. Scannell, M. D., Boston.

Assistant in Anatomy, Harvard Medical School; Assistant Visiting Surgeon, Boston City Hospital.

Nearly two years ago, under the auspices of the Division of Surgery of Harvard University, I undertook an investigation of the end results of cancer in and about the mouth at the City Hospital.

It was hoped that by thus taking stock some definite decision might be made as to the utility of certain kinds of operations about the buccal cavity; the results accomplished were distinctly worth while. During this investigation all the records of the hospital, over a period of nine years, were most carefully examined, the addresses of all the patients presenting this disease were noted, and carefully printed questions accompanied by a stamped self-addressed envelope were sent to all. After a reasonable length of time, when no answer was received, personal visits were made to the original addresses. Recourse was also had to the registration offices at the State House and the Old Court House, and the record of deaths carefully gone over. Among the questions on the printed form sent to these patients was one reading as follows: "At the beginning of your sickness did you first consult a physician or a dentist?" The results determined from the answers to this question were such as to justify the importance of my talk to you on this subject to-night. In about 40 per cent. of the cases of carcinoma of the tongue the dentist was the one first consulted,—the individual attributing the sore on his tongue

*Read before the Harvard Odontological Society, October, 1909.

to some irritation from either a carious tooth or some roughness thereon. In the cases of the superior and inferior maxilla nearly three-quarters of the patients had considered their difficulty to be one of an "ulcerated tooth." In my relations with patients presenting this disease, both in my House and Out Patient Surgical Service at the City Hospital, I have been constantly impressed with this tendency. It has been my constant desire to have the opportunity to present the results of this investigation to an organized body of Dental Practitioners, in the hope that I might impress upon them the desirability of immediately referring these patients to the surgeon. The one recognized belief and hope in the modern combat with carcinoma of any kind and in any locality is that to be successful the disease must be gotten at in the incipient stage. We know what brilliant results have been accomplished in early and radical operation for carcinoma of the female breast. We must attempt to achieve like results in buccal cancer.

Therefore, it is with no feeling that I am dwelling upon irrelevant subjects that I come to the consideration of the subject of my paper.

The cases upon which this report is based are taken from the records of the Boston City Hospital during the nine years from January 1, 1895, to December 31, 1903, inclusive. In this period, records are found of 69 cases, an average of about 8 each year. Of the total 69, we have been able through various means to secure fairly reliable information regarding 60, or nearly 87 per cent.

It has seemed undesirable from the view point of simplicity to attempt to define too explicitly for classification purposes, the unusual and relatively infrequent sites of carcinoma in and about the mouth. We have, therefore, grouped all the cases under four headings: namely, tongue, inferior maxilla, superior maxilla, and tonsil and fauces.

Carcinoma of the tongue we found to occur in 30 cases (43.47 per cent.); inferior maxilla in 22 (31.88 per cent.); superior maxilla in 9 (13.04 per cent.); and tonsil and fauces in 8 (11.59 per cent.).

On the age basis, we have, as would be expected, the majority occuring in the period from forty to seventy years; to be more exact, thirty to forty years, 7 cases; forty to fifty years, 17 cases; fifty to sixty years, 25 cases; sixty to seventy years, 15 cases; seventy to eighty years, 5 cases.

Sexually considered, 56 were males and 13 were females, slightly over four to one.

Almost all used alcohol and tobacco and many dated the first symptom from trouble with the teeth, but as in this class of patient bad teeth are the rule, too much stress should not be laid on this point.

Of the total number of 60 which were traced, 17 were either considered inoperable or else refused operation, leaving 43 on whom operation was performed.

Taking the cases as a whole, a general average regarding duration of symptoms, before application was made for treatment, is shown to be about seven months. This fact must not be lost sight of when later we come to speak in detail of the results and the causes of failure, the patients in most cases not having been seen until the disease was well established.

Touching briefly on the pronounced symptom or symptoms associated with each of the four parts involved, we find that when the tongue or inferior maxilla was the site of the disease, local pain and dysphagia were most complained of; in the case of the superior maxilla, pain, dysphagia, excessive salivation, and what we choose to call the trismus of malignant disease, whereby, because of the involvement by extension of the muscles of mastication, or the invasion of the temporo-maxillary joint, movement of the jaws becomes markedly limited or wholly prevented; where the tonsils and fauces were involved, pain and dysphagia were again the prominent symptoms.

In general, it may be said that the cachexia and associated systemic effects of malignant disease were not in evidence in this type of case; so that one looking for the secondary anemia, loss of weight and strength, etc., as helping in an early differential diagnosis, would be deceived. It may be said in passing that in each one of these 60 cases, the clinical diagnosis was confirmed by the pathological report.

Nearly all the cases showed, on microscopic examination, squa-

mous cell carcinoma, there being one case each of adeno-carcinoma, alveolar carcinoma, and carcinoma arising from an aberrant fragment of the thyroid gland at the foramen cecum of the tongue.

As to the duration of the symptoms in carcinoma located in each one of these four sites, antedating the time of the first observation: Tongue: average seven months; longest time, four years; shortest time, two weeks. Inferior maxilla; average, seven and one-half months; longest time, two years; shortest time, three weeks. Superior maxilla; average, six and one-half-months; longest time, twenty-one months; shortest time, five weeks. Tonsil and fauces; average, seven months; longest time, eleven months, shortest time, four weeks.

A duration of seven months would be an average, therefore.

As to results: Of these 60 traced cases, 56 were dead and 4 living, the latter seven, five and one-half, five, and two years, respectively, after operation, the lesions in these cases occurring in tongue and inferior maxilla (each 2).

In the cases recorded as dead, the average duration of life, from the time of the patient's first seeking help up to the time of death, whether operated or not, was about nine months: the longest being seven years and the shortest twenty days. Adding to this the average duration of symptoms antedating the first surgical observation, we find sixteen months to be the average duration of life from the time of the first symptoms.

Of the 43 cases operated upon, of whom 30 are known to be dead, the average duration of life was nine and one-half months or three and one-half months longer than in the non-operated cases. It must not be forgotten that 4 of these 43 are still living, as previously stated.

The operative mortality (by this meaning the deaths resulting from the operation itself) was 4, these varying in time from ten hours to four days. In each case death resulted from either post-operative shock (3) or hemorrhage (1); in none of all the 43 operated cases did there develop an inhalation pneumonia.

Our statistics would seem to show that age had relatively little effect on the time prognosis in this class of case, although the activity of the malignant process was perhaps a little less in those more advanced in years. In all those cases terminating fatally, the ultimate cause of death was the malignant process itself, usually

in the form of recurrence where operation had been performed, or as result of extension of the original lesion where no operation had been deemed advisable.

As to the site of the carcinoma as influencing tenure of life, regardless of the question of operation (in all cases dating from first observation); in case of tongue, average duration was seven months; in superior maxilla, average six months; in tonsil and fauces, average six and one-half months.

It will be seen, therefore, that seven months constituted an average, and that carcinoma of the tongue or tonsil brought a fatal termination no sooner than the same process in the upper or lower jaw.

Making a comparison of the operated and non-operated cases, merely from the standpoint of length of life (and not of physical or mental betterment), according to the location of the disease, we have these data:

Of those operated for cancer of the tongue, 2 are living, seven and five years respectively after operation, which in each case was partial excision. A priori, one would say that both of these cases must have been seen within a relatively brief time from the first appearance of the disease, and yet this was true of only one of them which was operated three weeks after the onset of the first symptom. The other case, now living seven years after operation, had the disease eight months before seeking relief. Of those dead, the longest period was two years and the shortest one day; average fourteen and one-half months. Of those not operated, the longest duration of life was fifteen months, and the shortest fifteen days; average seven months or one-half as long as the operated cases.

INFERIOR MAXILLA: Two living, five, and one and one-half years respectively after operation which in each case was a resection of one-half of the jaw (in these 2 cases, the duration of symptoms before applying for relief had been six and eighteen months respectively). Of those dead, the longest period was nineteen months and the shortest two weeks, average sixteen months. Of those not operated upon, one lived eight months, the longest, and one, one month, the shortest; average four months or one-fourth as long as the operated cases.

SUPERIOR MAXILLA: Average duration of life after

operation was seven and one-half months, the longest thirteen months and the shortest four days. We have records of only one case not operated upon, and in this, death occurred in thirteen months.

TONSIL AND FAUCES: Average length of life after operation was eight and one-half months, the longest thirteen months, the shortest two and one-half months. The only case not operated lived six months.

As to the influence of the kind of operation performed (complete or partial excision) in lengthening life or the reverse, these again will be considered according to location.

TONGUE: Complete excision, 7; average life, seven months. Partial excision, 10; average life, twenty-three months.

A disproportion here in favor of partial excision, over 3 to 1: we would recall to mind the fact that in the cases where the tongue was involved, the average duration of symptoms was seven months. At this point it must be mentioned again that the only two cases in this class living were partial excisions of tongue, operated upon three weeks and eight months respectively after the lesion was first noticed.

Inferior maxilla: Complete excision, 6; average life, sixteen and one-half months. Partial excision, 7; average life, seven months. Over 2 to 1 in favor of complete excision.

Superior maxilla: Complete excision, 5; average life twelve months. Partial excision, 3; average life, five months. Slightly over 2 to 1 for complete excision.

Tonsils and fauces: Complete resection, 2; average life, nine months. Partial excision, 3; average life, four months. Slightly over 2 to 1 for radical operation.

Out of this total of 43 operated cases only two stand out in contrast as cured, both of these, as will be remembered, being carcinoma of the tongue on whom partial excision was made.

Most unreliable are the statements of patients suffering from malignant disease in general, when attempts are made by means of impersonal circular letters to obtain facts regarding their condition, and their unreliability is especially marked in those affected with carcinoma of the buccal cavity where the tendency is to distort and exaggerate their post-operative sufferings as compared with the ante-operative state. Nevertheless, allowing for

all this, it is a fair statement that a majorityy of those of whom we have been able to secure information, either through letter or personal interview, have been able to state voluntarily that the operation gave them at least temporary benefit, certainly enough to have justified the attendant discomfort or risk. Out of thirty more or less satisfactory responsive cases, an exact statement would be that two considered themselves cured, 20 temporarily benefited at least, 3 no better than before operation, and 5 worse.

Another fair inference from this list is that the comfort and comparative freedom from suffering of those patients operated upon was distinctly greater than in the case of the non-operated, even though, according to these statistics, the tenure of life was not much greater. This feeling was especially well illustrated in the case of at least five patients, who, understanding from the beginning the gravity and apparent hopelessness of their state, returned again and again to the hospital for what transient relief might be afforded. In passing, it may be said that one of these has already had 13 operations since the date of her first one and within a fortnight has expressed her intention of returning for even further treatment.

SUMMARY OF RESULTS.

Subsequent histories obtained in 60 cases: Number living, 4; number dead, 56; number operated, 43; number not operated, 17; average duration of symptoms up to time of first observation, generally and specifically considered, seven and one-half months; average duration of life postdating first observation, whether operated or not, nine months; average duration of life from time of first symptom, sixteen months; average duration in those not operated, six months; average duration in those operated, nine and one-half months, operative mortality, 4.

In cancer of tongue, operated cases lived twice as long as non-operated cases.

In cancer of inferior maxilla, operated cases lived four times as long as non-operated.

In cancer of superior maxilla, and tonsil and fauces, there were not enough non-operated cases to justify comparison.

Effect of complete or partial excison as lengthening life: Tongue—partially excised cases lived over three times as long as those having complete excision.

Inferior maxilla: those having complete excision lived over twice as long as those palliated.

Superior maxilla: complete excision slightly more than doubled duration of post-operative life.

Tonsil and fauces: radical treatment resulted in a doubled length of life after operation.

Of 30 cases, 5 were made worse, 3 no better than before operation, 20 temporarily benefited, and 2 cured.

CONCLUSIONS.

(1). The mortality of cases suffering from carcinoma in and about the buccal cavity (based on the statistics presented in this report) is extremely high, at least 90 per cent.

(2). All unoperated cases die sooner or later of the disease, barring intercurrent affections.

(3). The duration of life of operated cases as compared with those not operated is in favor of the former by an average of about three and one-half months.

(4). The comfort of the individual is distinctly added to (even if it be only temporary) by some sort of surgical intervention; such relief may be either mental or physical.

(5). An early diagnosis of malignant disease about the buccal cavity is of the greatest importance, and a moderately radical excision of parts offers the greatest hope of a radical cure, commensurate with the comfort of the patient and the immediate risk of life. We realize fully and appreciate the importance of a most radical excision of parts in and about the seat of malignant disease. We believe that, in general, such extremely radical measures offer the greatest hope of permanent cure. The surgical treatment of malignant disease situated in very many parts of the body should consist of most radical excision. On the other hand, malignant disease may be situated in and about certain parts where extreme radical excision is attended either with great immediated risk to life or may so interfere with the function of the parts that the subsequent suffering and discomfort of the patient, provided he survive the operation, does not warrant such radical treatment, in view of the great probability of recurrence. There are instances where the patient wishes extreme measures to be taken for the purpose of avoiding recurrence, and under such circumstances there is no objection to employing the most radical

measures. We believe, however, that the risk and discomfort, together with the inability to offer much hope of non-recurrence, following the complete removal of the tongue, the inferior maxilla or more or less of the pharynx and larynx, should be weighed and carefully presented to the patient before such radical treatment is undertaken.

(6). Where there is extensive invasion of the parts, excision (if done at all) should be undertaken solely with the idea of palliation, without too serious interference with physiological function and without too great immediate risk.

THE SO-CALLED INFERIORITY OF THE WISDOM TEETH VIEWED IN THE LIGHT OF MODERN PROPHYLAXIS.

BY DR. JOSEPH HEAD OF PHILADELPHIA.*

Any dentist who carefully examines the enamel and dentine of newly erupted wisdom teeth will find their structure apparently no wise inferior to the other molars, and he will also find the sulci filled in solidly with enamel in quite as large a proportion of cases as any of the other teeth. And yet the wisdom teeth justly have the reputation of being the teeth most prone to decay. Where decay is general in the mouth this weakness of the wisdom teeth is not so apparent. But in a mouth where ordinary effective oral cleanliness is observed, the wisdom teeth are pre-eminently the principal sources of recurrent decay. The reason for this weakness becomes apparent when we examine the teeth of the average patient who conscientiously tries to have a clean mouth. In ninety per cent. of such cases where all the rest of the teeth are clean and free from soft bacterial accumulations, the buccal surfaces of the upper wisdom teeth will be covered with a paste that may or may not produce corroding acid, according to the bacteria therein contained. In hardly a less number of cases we will find the buccal necks of the lower wisdom teeth similarly covered with a film that extends along the thick flap of gum that rises to almost the height of the posterior tooth wall. Having observed these unclean regions we point them out to the patients and they are

*Read before The New York Institute of Stomatology, November 9, 1906.

shocked and promise to be more careful. But another visit will ordinarily show the same bacterial infection in an otherwise clean mouth. Here unquestionably lies the reason why wisdom teeth have popularly been pronounced soft and worthless. They deteriorate because they are not kept clean. And that they are not kept clean is largely due to the defective cleansing methods patients are generally being taught. In spite of Miller's discoveries and the well-known principles governing teeth and gum infection the old hackneyed principles of twenty years ago are still promulgated. The variety of contradictions is as confusing as was the babel of tongues. Numbers of dentists still teach the old theory that brushing the enamel wears it away and that brushing the dead epithelial scales off the gums causes recession. Patients whose gums bleed are told not to use the dental floss when the dental floss is the principal agent for curing such bleeding. And there are many who while advocating the thorough brushing of the teeth and gums, advise such brushing by methods that are hopelessly deficient. Patients are ordinarily told to rub the teeth up and down with the idea of getting in between the teeth with the bristles and yet a little thought will show how inefficient this method must be. The up and down distance through which the brush can pass is not over three-quarters of an inch. Now, the ordinary spring of the bristles of a brush is one-half an inch, so that the up and down movement results in the end of the bristles resting motionless against the teeth while the back of the brush flaps up and down beneath the lips. A trial out of the mouth on the hand will demonstrate the truth of this objection. If, however, a small circular motion is used we have distance enough to start the bristles moving and true, efficient friction occurs. Being urged to brush the bacteria from in between the teeth which is impossible, the patients are not told to sweep the masses of bacteria from between the teeth with floss silk which is possible, but are directed to destroy the remaining infection by means of a mouth wash, ordinarily a few drops sprinkled on the tooth brush. But is a mouth wash held in the mouth even for two minutes of any value in neutralizing masses of infection? It is most assuredly not. The only effective way to destroy masses of infection between the teeth is to remove these masses by sweeping the approximal surfaces of the teeth with floss silk, tape or some similar agent that can readily get into these otherwise uncleansible spaces.

For the purpose of throwing light on this subject I have taken extracted teeth covered with soft mushy infection and dropped them into solutions containing respectively one per cent, and three per cent. peroxide and twenty-five per cent. Glycothymoline. At the end of three minutes they were removed with antiseptic precautions, washed in sterilized water and cultures made on both agar and blood serum slants from bacteria obtained from the film on the tooth. This was done four or five times for each antiseptic. In only one instance did they fail to show a growth at the end of two days. Sometimes the growths were so small and stunted as to require a glass to discover them, but they were always present except in one instance where a three per cent. peroxide was used for five minutes giving complete sterilization. These tests show conclusively that while mouth washes might inhibit growths temporarily, they are not to be relied upon to neutralize or remove the mass of infection. Repeated washing of the mouth will prove this again and again. After one per cent. or three per cent. peroxide has been held in the mouth for from three to five minutes, the vicid bacterial masses around the necks of the teeth will still be present affording abundant supply of food for further infection that can continue its pathological work almost as rapidly as though no wash had been used.

Let us sum up what procedure the patient should undergo each day to keep the teeth generally clean. First, every approximal surface should be swept with floss silk to remove not only bits of food but masses of bacteria that may exist. Second, the teeth should be brushed until they are bright and clean. The patients need not try to get the bristles in between the teeth for that is impossible, but let them give all the exposed surfaces a good vigorous brushing with long sweeps of the brush. A dentrifice should be used according to the necessity of the case. Third, some mouth wash like twenty-five per cent. Glyco-thymoline should be held in the mouth for two minutes or more to destroy or inhibit the growth of the thin bacterial films necessarily remaining after the passage of the silk. This should be done morning and evening and is usually sufficient but where an acid condition appears to exist from secretions, the teeth should be bathed in milk of magnesia before going to bed. When tartar accumulates it can only be removed by the dentist and therefore does not concern the patient's daily routine.

Having discussed the general method for keeping the teeth and gums wholesome, let us now consider the means for cleansing the wisdom teeth. Let us consider the upper wisdom teeth first. An examination of the skull will show that when the jaws are in apposition, the end of the tooth brush can just reach the middle of the wisdom tooth. But as the thrust of the brush bends the bristles one-half an inch from the end of the brush, under such conditions the bristle never touch the wisdom tooth at all. And thus we understand why the buccal surface of the average wisdom tooth is constantly coated with a bacterial film. The remedy is easy. Tell the patient to open the mouth and put the middle of the tooth brush back of the wisdom tooth and brush. It is not necessary to have an up and down motion or a circular motion or a brush with a tuft on the end. A plain ordinary tooth brush that brushes is all that is necessary. When the back of the wisdom tooth is buried almost level with the gum as usually occurs, a brushing of the side and grinding surfaces as described will be sufficient. After the brushing has been done as completely as possible, a piece of tape should be passed back of the wisdom tooth and pulled backwards and forwards until it is cleaned from neck to grinding surface. After this the mouth wash will be amply able to sterilize the surfaces. Concerning the lower wisdom teeth where the cheek falls in between the tooth and the ramus of the jaw, in an astonishing number of cases the totth brush does not easily enter. It is a little difficult to get at, but with care it can be done. So the remedy for cervical buccal decay of the lower wisdom teeth is as with the other teeth to brush it. It is not new shaped brushes that we need that during rest fit the interstices of the teeth. What we need is bristle friction, and any shaped brush of moderate size will give us this under intelligent direction.

CERVICAL ADENITIS WITH REFERENCE TO MOUTH INFECTION,*

By Francis A. Donoghue, M. D., Boston, Mass.

As the treatment of Cervical Adenitis involves both the treatment of cause and effect, it is desirable, in many cases, for the general surgeon to call for assistance upon his more highly specialized brother, the Doctor of Dental Medicine.

---

* Read before the Harvard Odontological Society, September 20, 1906.

In turn better results would be obtained by the dentist if he called on the surgeon, early, to remove nasal obstructions, (adenoids, polypi, etc.), which cause faulty breathing, before attempting to treat irregular teeth resulting from these conditions.

The importance of a perfect chewing apparatus for proper digestion and the danger of Chronic Pus Processes in the mouth, to the body as a whole, are not well known.

If the medical profession, as a whole, fully appreciated that a pus process with caries of the alveoli is no less dangerous because it attacks insidiously than a pus process elsewhere, which gives warning from its position, there would be fewer end results to treat, such as apparently unexplained anæmias, endo- and pericarditis, or local glandular swellings.

The cases of gastric ulcer and chronic gastritis, reported by Colyer,[1] as following continued Pyorrhea, are certainly startling and worthy of a great deal of consideration.

The experiments of Sanarelli,[2] fifteen years ago, showed "the power of the saliva to destroy the ordinary pus producing bacilli," but when the mouth contains a large amount of decomposing organic pabulum, the most favorable conditions are furnished for rapid bacterial growth, the resulting irritation opening a wide door for infection through the mucous membranes. Rose,[3] in recent experiments, has confirmed and Drs. Miller[4] and Power[5] have emphasized these deductions.

Even Adenitis from decayed teeth, in children, is accompanied by marked constitutional disturbance, as is shown by the study of blood change by Wile,[6] who found, in a case of sub-maxillary Adenitis, "a leucocytosis as high as 43,000."

Enlarged and inflamed glands in the neck or elsewhere, are *not* idiopathic. Every enlargement of a lymphatic gland is preceded or accompanied by a cause. It is, therefore, absolute folly to treat a gland without treating the cause.

Inflammations of lymphatic glands in the neck are primarily caused by pyogenic infection.

So-called tubercular glands of the neck are not tubercular except in so far as the tubercle bacillus may be found, living or dead, in conjunction with pyogenic bacteria and the decomposition products caused by their action.

The growing agitation regarding the danger of Tuberculosis

and the increasing rigidity of medical inspection in schools, both make for a proper understanding of Adenitis in children.

It will be criminal if suffering from this condition condemns children to be shunned as lepers or segregated, as dangerous to their playmates.

Even our preconceived ideas as to how the tubercle bacilli enter the body in cases of Pulmonary Tuberculosis appear, in view of recent investigation, to need readjusting.

For illustration I will quote a few of the more recent reports of investigations along this line.

ORIGIN OF PULMONARY TUBERCULOSIS. Schlossman and Engel[7] make out a strong case in support of the assumption that "tubercle bacilli ingested are taken up into the system by the same route as particles of food. The mesenteric glands are used for the passage through them of corpuscular elements, droplets of fat, etc., and their behavior during digestion indicates that they differ functionally from the other lymph glands in the body. The bacilli entering the mesenteric glands are passed along to the thoracic duct, and from here they can readily infect the lungs and bronchi. Ingested bacilli are able to pass through the intact intestinal wall, through the glands and into the thoracic duct as readily and as rapidly as the food particles follow the same route. The authors found the tubercle bacilli in the lungs in young guinea-pigs a few hours after the bacilli had been administered in milk."

"A. Calmette and C. Guerin (Origine Intestinale de la tuberculose pulmonaire et mechanisme de l'infection tuberculose" supplement their previous publications on experimental tuberculosis with the present article, which relates research with cows. The results show that adult cows, as well as calves, contract tuberculosis by the intestinal route, without any traces to be found in the walls of the intestinal tract revealing the passage of the tubercle bacilli through them. In younger animals the bacilli are retained more or less completely in the mesenteric glands. They may die off in the glands or may entail the formation of tubercles. In adult animals the defensive reaction on the part of the glands is much less pronounced, and the bacilli are generally swept along, with the leucocytes which have incorporated them, into the lymph circulation and through the pulmonary artery to the lung. Pulmon-

ary tuberculosis in the adult, supposedly primary, is more often of intestinal origin. In experimental work, infection by way of the digestive tract is the most effectual and the one that conforms best to the normal conditions of natural infection."

A recent communication from the Copenhagen Institute of Pathologic Anatomy[9] continues Fibiger's research on primary tuberculosis in the digestive tract. "He found tuberculous lesions in 116 out of 213 cadavers, and in 13 they were primary in the digestive tract or connected glands. Among the 79 children, 25 were tuberculous, and in four of these the lesions were primary in the digestive tract. Ipsen has continued this research, the total material now comprising 600 autopsies. Tuberculous lesions were found in 311, and they were evidently primary in the digestive tract in 5.17 per cent. of the total cadavers, and in 10 per cent. of the tuberculous, that is, in 31 cadavers. Out of the 187 children's cadavers, 58 proved to be tuberculous, and the lesions were primary in the digestive tract in 10, that is, in 17 per cent. These figures are manifestly too low, as they do not include those in which the tubercle bacilli passed through the intestinal walls without leaving any traces. The circumstances indicated infection from cow's milk in some of the cases, and from association with consumptives in others."

Dr. Frederic M. Briggs of Tufts Medical School has, for a number of years, called attention to the fact that in pulmonary tuberculosis, lymph glands of the neck are rarely involved, and evidence that they had ever been in a condition of acute inflammation is usually absent.

In a somewhat extended study of Adenitis of the neck at the Boston Dispensary, extending over a period of seven years, I have found extremely few cases where the source of infection could not be demonstrated, and the failure in a few cases was due, I think, to incomplete examination. In all cases. where the gland had not reached the stage of disintegration, cure was obtained by treating the primary cause.

"The glandular apparatus of the head and neck presents a considerable degree of development. It is, moreover, in the cervical region that the first glands appear in the course of phylogenic development." The outpost sentries, as it were, to give timely warning of the enemy of disease.

The general arrangement of these glands may be classified, according to Poirier,[10] as follows:

"They form at first a kind of circle, a true glanduiar collar, placed at the junction of head and neck. From this, runs on either side, a vertical chain which stretches underneath the sterno-mastoid, and accompanies the vessels and nerves as far as the junction of the neck with the thorax. This principal chain is flanked by several secondary chains of less importance."

This glandular circle is divisible into a number of groups named from the region occupied, and drain certain well-marked areas. When a general enlargement of all lymphatic glands is noticed, it will be found to be a manifestation of a general constitutional infection.

"There are six general groups of cervical glands. *First. The sub-occipital group* draining the occipital portion of the hairy scalp, and their efferent vessels run downward and terminate in the highest glands of the sub-sterno-mastoid group. *Second. The mastoid group* draining the temporal region of the hairy scalp, the inner side of the ear, and from the posterior surface of the external auditory meatus."

The sub-occipital and mastoid groups become inflamed from the irritation of pediculi, hair-dye, dirt, and pus-process, like boils and pimples.

Third. The parotid and sub-parotid-groups. These are composed of deep and superficial glands. "They drain the skin of the temporal and frontal regions, from the eyelids and root of the nose." (Kuettner.[11]) "They may also receive vessels from the mucous membrane of the nasal forsae and from the posterior part of the alveolar border of the superior maxilla."

"Sub-parotid glands are placed between the parotid and the pharynx, and are the usual starting point of laterno-pharyngeal abscess. They drain the nasal fossae, the naso-pharynx, and the eustachian tube." These are enlarged when there is pus producing process in any part of the territory which they drain, especially in cases of Tonsillar infection.

Fourth. "The sub-maxillary group receive the lymphatics of the nose, the cheek, upper lip, the external part of the lower lip, almost the whole of the gums and the anterior third of the lateral border of the tongue.

Their efferent vessels terminate in the glands of the deep cervical chain."

Fifth. "*Supra-hyoid median glands or submental.* These include the glands contained in the triangle bounded by the anterior bellies of the two digastric muscles and the hyoid bone. They receive their lymphatics from the integuments of the chin, from the central portion of the skin of the lower lip, from the corresponding portion of the alveolar border of the inferior maxillæ, from the floor of the mouth, and possibly from the tip of the tongue."

Enlargement of the sub-maxillary and submental groups calls for consultation with the dentist. In these cases it is necessary, in making a diagnosis, to differentiate from inflammation or obstruction and from the lingual and sub-maxillary glands or hyoid cysts. As a rule, however, the infection atrium is evident and definite, and may be caused by a decayed tooth, irritating deposits of tartar, loose teeth, (especially in adults), and ill fitting caps or plates. More than 95 per cent. of all anterior glandular enlargements, are explained by one of these conditions.

Sixth. "*The retro-pharyngeal* glands are placed behind the pharynx and laterally. They receive, apparently, almost all the collectors coming from the mucous membranes of the nasal fossae, and the cavities in connection with them, and from the naso-pharynx."

The enlargement of these glands points to infection through adenoids, to frontal or sphenoidal sinusitis to ulcerations of the nose, as well as to catarrh accompanied by a muco-purulent secretion.

From the glandular collar just described, a chain of glands detaches itself on either side and descends with the deep vessels as far as the root of the neck, and are known as the deep cervical chains.

This is the most important glandular region of the system. It comprises fifteen to thirty glands on either side, and in certain pathological cases, there appears to be a considerable increase in number. They receive most of the efferent vessels of the glandular collar, together with many direct vessels, and in these are seen the final state of infection when the interrupting glands and nodules have been overcome by the inflammatory process.

Admitted then that these lymphatics drain well-defined areas, the first step in the treatment of an enlarged glandular station on the lymphatic route is to follow the line back to its source.

Syphilitic manifestations will be accompanied by general lymphatic enlargement. Cancer, occurring at an age when lymphatic glandular activity is at an ebb, will present, not so much an inflammation of the gland substance as a replacement of the gland by a definite new growth.

Without presenting the history of the individual cases, I may state in a general way, my conclusions, which are based upon a study of upwards of 300 cases.

1. Enlarged glands of the neck are not, primarily, tubercular, and bear the slightest relation, if any, to general or pulmonary tuberculosis.

2. They are due to a mixed infection of pus producing bacilli.

3. They will quickly resolve if the source of the infection is removed before the glandular tissue becomes disorganized.

4. If disorganization takes place, the gland should be poulticed until the gland is practically liquified. It should then be opened by a stab-puncture, emptied and drained by a "Briggs Canula,"[12]

5. Cases seen late, with a large mass of partially calcified and partially disorganized glands present, call for a thorough and extensive dissection.

The treatment by tonics, Cod-liver Oil, iron, arsenic and the like, belongs to the age of "idiopathic inflammations," "slow-fevers," and the "evil effects of the planets."

Treatment, other than local, should be food, fresh air, and proper clothing.

REFERENCES.

[1]Journal Br. Dental Association, July, 1900; [2]Cent. f. Bakt., No. 25, Jena, January, 1891; [3]Deutsch. Mon. f. Zahn, Berlin, Dec., 1905; [4]Dental Cosmos, Dec., 1904, Jan., 1905; [5]Journal Am. Med. Assoc., Aug., 1906; [6]Arch of Pediatrics, N. Y., Sept., 1906; [7]Deutsch. Med. Woch., XXXII, No. 27; [8]Ann. l'Inst. Pasteur, Paris, XLVI, No. 47; [9]Hospital stidende, Copenhagen, XLIX, No. 26; [10]Traité D. Anat. Humanie, Paris, 1901; [11]Küttner Beitr. z. Klin. Chir., XXV, P. 33, 1899; [12]Boston M. & S. Journal, May 2, 1895.

THE NEED OF AN INDEPENDENT JOURNAL IN THE DENTAL PROFESSION.*

BY HERBERT L. WHEELER, D. D. S., NEW YORK CITY.

The closing of the long and useful career of the *International Dental Journal,* which has been the representative of that very small number of high-minded men of character in our profession for so long, has led me to choose the above title for this paper, in the hope that we may be stimulated to struggle on despite the attempts of the commercial magazines to destroy our principles, our ethics, and our very life as a profession, by forcing us to become pap-fed children, without our knowledge, to be sure, while making us pay in a financial way double and treble, and at the same time, making us pay a price in loss of character, enterprise and individual development that will surely bankrupt our moral and ethical existence.

From the beginning there has been at times an extra effort on the part of our ablest and most far-seeing men to rouse the profession from its lethargy in this matter, if we would not sink into the pitiable condition of a profession in name only, while becoming in reality the mere puppets and figureheads of the astute and clever corporations that furnish us with our various instruments and appliances, plus a well-dressed magazine whose excuse for existence is the necessity for spreading the alluring description of their wares before us. Of course they add to these advertising pages enough scientific contribution, so long as this does not interfere with their private interests, to induce the workers of our profession to unwittingly help further their designs to impress us with the thought that we are being both entertained and instructed. It is a matter of observation that oftimes the material they print is of such a character that no great amount of experience has been added to the brain of the writer in producing the material, while the brain of the reader, if he persists in wasting his time upon it, is likely to become uselessly fatigued. The New York Institute of Stomatology has persistently and consistently stood upon its own feet and advocated an untrammelled profession in the matter of publication since its formation. For this reason I shall quote from various papers read before a meeting

* Read before The New York Institute of Stomatology, October 2, 1906.

of this Society upon the question of Journalism, May 3, 1898—more than eight years ago.

"Dr. William H. Potter, of Boston, in a paper read at that time, showed that three out of the five dental journals of Germany were independent of supply houses. In England, three out of the five journals were independent of the supply houses and are to-day. While in our own country there were fifteen trade journals and but two independent."

This greater proportion of journals published abroad, not dependent upon the whims and personal interests of tradesmen, has no doubt a direct relation to the superior standard of ethics of a proportionately larger number of dentists in England than in this country.

Dr. Potter calls attention to a fact which is worthy of note, that we express ourselves mainly in our journals and not in books, which makes the journals to a large extent the record of the intimate life of professional work.

There may be a desire on the part of the trade journal to serve our professional life, but this desire of a necessity must be subservient to the actual ability of the trade journal as an advertising medium to secure the sale of their goods at such an exorbitant price that not only is the sale cost of the manufacture of the goods paid for, but the cost of placing the advertisement before us is paid for at a liberal rate, and so also is the cost of publishing the matter contained in their pages, which is given to help wash down the highly tinted advertising that is placed before us.

Now this condition of things is doubtless very agreeable to many of our overworked confreres who spend long hours in a close and stuffy room following a vocation that is not made less wearing on our nervous organization by being in contact with and serving many people who also are troubled with irritable nerves. Nevertheless this condition of things, although agreeable, leads to a bondage to the manufacturing houses which no thoughtful and self-respecting man with a desire to grow and improve can wish for.

This does not indicate that there is anything questionable in the desire of a tradesman to extend his business. The pushing and advertising of his wares is perfectly proper if done in a proper way. The fault lies with the dentists who often, through a narrow and misguided self-interest, allow themselves to become intel-

lectually and morally pauperized, because they vainly imagine they are getting their dental literature a little cheaper. I shall endeavor a little later on to point out the fallacy of this assumption, and to show that the quality of the literature under these conditions is bound to deteriorate and become of an inferior quality.

Let us for instance consider why the journal published privately in the interests of a trading house cannot rise to the standard of reliability and usefulness that a genuine profession demands.

I think it is perfectly evident that the primary cause of existence of the journals owned by the dental supply houses is to obtain commercial preferment and advantage for the house which publishes them with the profession—that careless, easy-going profession on which they fatten so royally out of their exorbitant profits.

Do any of them stand for higher education; that is, superior development of the individual, if it interferes with the sale of their patented devices? These devices which are placed under our noses so conspicuously in the advertising pages of these journals which are furnished us almost gratuitously, and which have emblazoned across their cover "Published in the Interests of the Profession." Do any of them stand for human betterment except through channels in which advantage will come to themselves? Do any of them make it their policy to encourage that which is excellent and true, if the excellence cannot be patented and turned over to them for a price? Were they ever known to refuse to publish an article in which was advocated something that meant financial profit to them, and were they ever known to allow to be published an article in their columns which told disagreeable truths about some of their ways of darkness, or showed the hypocrisy and questionable dealing of some institution they were especially interested in?

Can we blame them? We who with such childlike simplicity often permit them to furnish our science for us, fresh from the pen of men whose claim to fame lies in the fact that much of the product of their brain is produced under the stimulus of a price or favors from these dealers who consider it a good business proposition to use their statements and reports of their commercially guided researches as a high and potent vehicle for carrying to the gullible profession the smooth and clever statements concern-

ing the superior quality of the various mechanical implements or proprietary articles produced by themselves.

This does not necessarily indicate that all of the material published by them is worthless. On the contrary, they are quite alive to the fact and properly so, that an intelligent self-interest demands that this material, so far as it does not conflict with dividends, may be of the very best.

Furthermore, do not imagine that they are not fully alive to the proposition that many a well-meaning man with an ambition to know more and to delve somewhat in science and research pertaining to his work can often be tempted by various seemingly proper and inoffensive courtesies to discover that which is of primary advantage to their manufacturing department, and at the same time strenuously and in good faith assert to his admiring confreres that these things are strictly to the advantage and interest of the profession.

Not only is the profession injured by the condition of lethargy and lack of aspiration for better things, when our sole dependence for information is upon these instruments of the commercial world which depends upon the profession for a livelihood, but our very confreres who are retained by these interests on a salary—the salary I suppose is intended to insure that the employe will look out for the interests of his employer under any and all circumstances—are so sadly demoralized that they seem unable to decide which is the business and which is the profession. As evidence of this, witness the remarks of an editorial in the *Dental Cosmos* for February of this year in which the writer seems to be in error in the idea that there is no essential difference in the ethics of professionalism and the ethics of trade. The fallacy in the editor's statements is when he assumes that because both are based upon common honesty and equity there can be no difference in their attitude towards life. Granting that they are both honest and honorable in their intentions, I think you will agree with me that there is a vast gulf between the attitude of the tradesman towards his fellow-men and the attitude of the professional man toward those who seek his professional advice. President Faunce, of Brown University, in an address before the Rhode Island Medical Society, has this to say: "Trade is occupation for livelihood; profession is occupation for service of the world. Trade is occupation for the joy of the result; profession is

occupation for joy in the process. Trade is occupation where anybody may enter; profession is occupation where only those who are prepared may enter. Trade is occupation taken up temporarily until something better offers; profession is occupation with which one is identified for life. Trade makes one the rival of any other trader; profession makes one the co-operator with all his colleagues. Trade knows only the ethics of success; profession is bound by lasting ties of sacred honor." Or to put it in another way, one manufacturing concern has never been known to denounce another because they sell to the poor unsophisticated student just coming out of college all the goods they can possibly persuade him to take, up to the amount they believe he can safely be trusted for, without regard as to whether they will ever be of any use to him now or in the future. Yet how long could a member of our calling place appliances, fixtures or fillings in the mouths of his patients without regard to their usefulness or utility, or their contributing to the welfare of the patient, without soon finding himself shunned and condemned by his self-respecting colleagues. Or, to view it from another point, there is no fault found with the merchant when he claims that his particular mix of alloy, or brand of cement, or quality of gold, is superior to all others. But let a member of our profession assert that he is furnishing professional service superior to all others by means of processes of his own invention, and systems known only to himself, and that man will be promptly thrown out of any ethical society of which he is a member. And yet we are told there is no difference between the ethics of business and the ethics of a profession.

Gentlemen, I appeal to you if this is not evidence of the sorry plight that may come to a fair young profession when she assumes to take her place among her sisters of the learned professions, and at the same time acknowledge her parent to be the commercial supply-house. Surely the trade journal has wrought a wonderful demoralization to a keen and clever intellect when it can so far forget its professional training as to assume the position I have called your attention to.

And these are not all the evils that come in this train. Look about you at the National and State Meetings and see how many of these employes of the supply-houses take an active and important part in shaping the policies of these various organizations,

and seem never to think that their position is incongruous. Could any man with a nicely balanced sense of honor becoming a member of an organization of professional colleagues, an association organized in the interests of these colleagues, and then accepting office and committee positions with the gold received for the hire to the commercial supply-house in his pocket!

Did you ever know if it came to a question of divided interests, of one of these gentlemen severing his relation with his commercial employer so that he might be able to stand up like an honest and unbought man for his profession? I know of no such inspiring occasion.

And there are other evils yet to be considered. The dean of the dental department of our great Harvard University writes a paper setting forth a few wholesome and plain truths concerning certain institutions, one of which seems to enjoy the special favor and deep interest of some who are in the employ of certain large commercial interests, and this paper fails to appear in the journal controlled by those commercial interests, in spite of the fact that they had assumed the publication of all the proceedings of the society before which the paper was read. Is it possible that the omission could have been only accidental?

In another instance a Philadelphia gentleman wrote a paper a few years ago, containing a recommendation of a certain material, and designated by name the compounder and manufacturer of the material recommended. The trade journal publishing the paper reproduced the article as written, except that in place of the name designated in the article as originally written as the manufacturer of the material recommended, there appeared the name of the manufacturer who was the publisher of the journal containing the paper.

There are other lines in this editorial to which I wish to call your attention, just to show you how unsafe it is for us to put our professional interests in the hands of our kind friends who do so much for us, *viz.*, the supply houses.

In speaking of the attitude of the International Dental Journal where the editorial speaks of the supply-house journals as "trade-journals," it says, "The sole warrant for this attitude is contained in the fact that a large part of the cost of their production is borne by the dental supply-houses."

Let us analyze this statement, and see if it is true. Did you ever hear of the dividends on the stock of the dental supply companies being reduced or skipped to furnish the profession a journal at one dollar a year? Did you ever hear of the salary of the president, secretary, treasurer, editor and various clerks and sub-clerks being reduced in order to furnish us with this monthly bundle of advertisements? I never have.

If, then, the expense is not borne in this way the means for publishing this journal must come from another source, and the only source it can come from is this—the profits on the various supplies which we buy are raised to such an inordinate percentage that not only is the cost of the supplies covered, but the expense of advertising, publishing the journal and paying the editor, and doubtless a handsome profit left over besides. For the cost of publishing some of these trade-journals is so great, according to the statement of one of the editors, that if any manager of a first-class independent dental journal were to run up such a bill of expenses they would promptly be thrown out of their position. For Dr. Ottolengui in discussing Dr. Potter's paper, from which I have previously quoted, has said that a dental magazine, to reach the standard which has been set by some of the so-called trade-journals could do so only by a loss of from ten to eighteen thousand dollars *per annum*. In other words, we assume that if the gentleman speaks from knowledge that the journal that employs him costs from ten to eighteen thousand dollars per year above the income from advertising and subscribers, or else is not up to the standard he had in mind.

If such is the case, the dentists are contributing unwittingly, both those who subscribe for this magazine and those who do not, to a very expensive and extravagantly run magazine. The entire expense of running the International Dental Journal for the year 1901 was less than $6,000, and I know whereof I speak, as I have a copy of that year's report in my possession. In an estimate which I have seen, the American Institute of Homœopathy figured that they could publish an official organ for $7,600 a year. The American Medical Association, according to a report which I have seen, publish their journal weekly, forty pages of reading matter and thirty pages of advertising, at the cost of about $5,000 per year. The report of the trustees of that association shows a net

profit for the year 1903 of $50,481.33. The gross income for advertising alone was over $88,000.

Under these circumstances it would seem that a journal that costs from $10,000 to $18,000 above its income to publish must have been very badly managed or else have given its advertising space away, in which case I suppose the dentists pay for that also.

Now, it is very evident, in spite of the fact that an attempt has been made to make it appear otherwise, that the profession does pay for the trade-journals, and pays heavily, while at the same time we are prevented from having a say in their policy. This seems hardly fair, does it, when we consider that their paid agents, the gentlemen who are supposed to guide the policies of these journals, take a very active part in the affairs of the various dental organizations which were supposedly created in the higher interests of our profession.

Does it seem possible that we as a profession shall be willing to continue having our work reported, and some of our science created, and our interests directed by these "corporations" that so kindly relieve us of all responsibility in the matter?

There is, however, one more thing that I wish to call your attention to, which I have not previously mentioned. We all know what a reflection upon our integrity and a blot upon our reputation as a profession, the dental-parlors are, whose signs and liveried "runners-in" stare us in the face at every turn, these dens of vampires that suck the blood from an innocent people, and do more damage to the welfare of the race in a few moments than a well-intentioned man in the profession can repair in a lifetime. And yet did you ever hear of a trade-journal taking a stand against these vicious and disreputable institutions, and why should they? Its agents have been known to say that one of these places is more profitable to them by far than the business of half a dozen reputable practitioners. It even seems impossible for the dental colleges to muster up courage to take a stand against these institutions of the devil. How can they take a stand when the paid agents, or editors, of a supply-house may also hold important positions in the dental college?

I think it is Johnson who said: "The law of premogeniture is a good thing: it limits the number of fools in the family to one."

This means nothing more nor less than this, that the man who finds it unnecessary to exert his forces, degenerates, becomes

less competent, and that is certainly what is happening to the dental profession in its present state of dependence upon trade-journals.

It has been said when men lived in houses of reed they had constitutions of oak, but when they lived in houses of oak they had constitutions of reed.

If the profession will be up and coming, will become unselfish enough to each and every one, put in a little labor in the interests of the profession without thought of a pecuniary reward, he will receive a return in the form of increased faculties and ability, enlarging self-respect, the attainment of the sincere respect of his colleagues and the community that will constitute a better reward than all the favors or money the commercial interests can bestow. I regret to say that various gentlemen who have studied dentistry in the schools of Europe and have come to America to increase their knowledge, have remarked to me their disappointment in finding the opportunities for learning so much more meagre than they had expected here, and that it was their belief that America was lagging behind in this matter to-day. It seems to me that this condition is largely attributable to the fact that we as a profession have given up the leadership of our various activities to the representatives of the commercial houses which we so generously support, and we have done this so long that we are actually becoming incompetent and are losing our interest in the things that make for personal vigor and growth.

That is, our selfish interests have so taken possession of us that it is sometimes doubtful if we are a profession, but merely an organized trade. I believe this condition has been created because of our too ready and constant reliance upon trade journals.

In view of the conditions, do you not think it high time that we as a profession began to take active steps to attain that position where it can be said of all of our profession that these are men who can not be bought; men who put character above wealth; men who possess opinions and are not afraid to state them; men who would rather be right than live in the sunshine of the smile of the supply-house they deal with; men who will not think anything is profitable that is dishonest, and will not compromise with questionable things; men whose ambitions are not confined to their own selfish desires, and are willing to sacrifice their private interests for the good of all? And do you think we can develop

this kind of a character as long as we are willing to listen to the suggestion that the cost will be too great whenever there are a few society proceedings to be published, while the trade-journals flock about us and offer to give us the service, and so lull our better senses to sleep by appealing to our pocketbook, while in reality they are making us pay doubly and trebly in indirect ways, as I have shown?

Do you not think it better to scorn the tempter, to stand up like men and pay for what we have, and pay for the publishing of that, that we have invited to be read before us so that we may control the matter and see that it is correctly published, whether it be in the interests of our commercial friends or no? What if it does require some self-sacrifice? Self-sacrifice is only a process of character-building, the reward of which is so great in its good effect upon our individuality that there should be friendly rivalry upon our part as to who can sacrifice the most. Besides, if we do not set the standard of our professional desires and attainments so high that those who come after us will need to exert great energy to move that standard onward and upward, we will have been derelict in our duty and will have contributed to its final downfall rather than to its future elevation.

If you wish to be sure of the future dissolution of your profession, be satisfied with the present conditions. This plan will silence and suppress the man of intuition and the man of genius.

What we need as a profession more than anything else to obtain for us genuine improvement is the opportunity for all members of the profession of untrammelled freedom of thought and speech. Men grow through an expression, and wrong expressions are better than none at all. Individuals grow by throes and throbs, by delving and labor; this develops men who do and dare, and in this way do we obtain a knowledge that has previously been considered unknown and unknowable.

I do not mean to assert that trade-journals are undesirable in their place, or that they should be suppressed. What I do mean to impress upon you is this, that in order to get the fullest expression of our upward struggle and attempts at scientific attainment it is necessary that we have one or more journals at least that are untrammelled by being attached to any kind of a business organization whose private interests may be the opposite of that which makes for the highest and noblest aims of our pro-

fession. And even though in order to do this it requires extra effort on the part of our ofttimes tired bodies, or financial contribution at a time when we feel we could well use the money otherwise. I believe that the returns for these efforts will be so great in stimulating us to a higher self-respect and assisting the young and frequently discouraged, to a higher and more hopeful attitude, that we will feel that the compensation received in the thought that we have done something unselfish which has contributed to the welfare of the whole is an ample reward for our work.

There is so much to be said on this subject, and it is of so much importance to our future as a profession, that a book could well be written. But I will not try you by extending my paper too greatly.

Herbert Spencer has said that "Education is the creation of cells and the registration in the brain of experience." Let us then endeavor to educate ourselves by taking an active interest in these things that have been so generally done for us by the trade-journals in the past, in order that we may become educated to a sense of discrimination and independent manhood that will enable us to stand better, than our profession does at present, with that community whom we serve so usefully.

Now, gentlemen, do you not think it high time, in view of some of the things I have called your attention to, that we took a new start and insist upon having and supporting an independent journal that is in no way connected with, or that there can possibly be any suspicion of having any relationship with these frightfully evil and destructive influences that seem now to have the mastery in the organization of our professional life?

The New York Institute of Stomatology.

A meeting of the Institute was held at the Chelsea, No. 222 West Twenty-third street, New York, Tuesday evening, October 2nd, 1906, the President, Dr. S. E. Davenport, in the chair.

The minutes of the last regular meeting were read and approved.

THE PRESIDENT:—I have just been informed of the death of our esteemed associate, Dr. Dwight M. Clapp, of Boston. This information is received with great sorrow and re-

gret. Dr. Clapp has been for years a member of this society, a member of the Board of Examiners of the State of Massachusetts and an instructor in the Dental Department of Harvard University. I will appoint Dr. Henry W. Gillett a committee to prepare a minute upon the life and work of Dr. Clapp to be presented at some future meeting.

Dr. R. H. M. Dawbarn presented a lad of twelve years, upon whom he had operated for a condition of double hare lip, together with a cleft of both the hard and soft palate. There was also a complete splitting of the uvula. The rudiments of the upper incisor teeth were present.

The operation was done first upon the palatine condition. The union of the soft palate was ideal. The operation upon the hard palate was very difficult because of the great gap. It is necessary in these cases to strip the periosteum from the adjoining bone in order to get sufficient material to close the gap. The nutrition in such cases must necessarily be poor. At another time a plastic operation would be performed to complete the closure.

The external features of the operation had been very successful, there being practically no scar.

Dr. M. I. Schamberg.—The case presented is one of great interest. Of course it is difficult to speak of this case without having seen the condition before the operation. The only improvement that might be suggested would be the removal of the drawn appearance of the lip and the tipping down of the point of the nose. Has Dr. Dawbarn had any experience in the use of the X-ray after a plastic operation for minimizing scar tissue? I have found it very helpful.

Dr. J. Morgan Howe.—There has seemed to be a great difference of opinion between dentists and surgeons as to the desirability of this operation. Dating from Dr. Kingsley's time it has been claimed that no very great benefit obtains from the operation, and that a much greater degree of efficiency and comfort is obtained by the use of an artificial palate; but with the improved results evident from operations such as this that Dr. Dawbarn kindly exhibits, it is evident I think that the time of general usefulness in these cases, for obturators and false palates is passing.

Dr. Dawbarn.—I think the real advantage in the use of the X-ray, as suggested by Dr. Schamberg, is not in the reduction of the scar tissue but in the hastening of the epithelial growth.

Regarding Dr. Howe's remarks, I always urge parents to permit an operation in every case. As to hare lip, of course no appliance can remedy its unsightliness.

The paper of the evening, entitled *"The need of an Independent Journal in the Dental Profession,"* was presented by Dr. H. L. Wheeler.*

THE PRESIDENT.—A fact in this connection is perhaps worth mentioning. But a few years before this society was formed the then largest dental society of this city held its regular meetings, month after month, within the four walls of the salesroom of a dental supply house. We can easily imagine what the influence of such an arrangement would be upon the papers and discussions at such meetings. With the exception of three societies besides this so far as my knowledge goes, the proceedings of all dental societies are published in the columns of dental journals, owned and controlled by the dental supply houses. I trust the paper we have heard to-night may be ably discussed and read by the whole profession.

DR. DAWBARN.—We, outside of this particular specialty, have the same battle on at the present time. The editors of some of the most prominent medical journals claiming that it is all that they can do to keep the editorial pages clean, the publishers insisting on filling the advertising columns with advertisements of unethical preparations that claim a long list of cures. As a result of the disinclination of the publishers to give the profession a clean journal, published in the interest of the profession, the American Medical Association has taken the matter in hand and is now publishing its own journal with great success. There can be no question but that the same thing can be done in the interests of this profession, provided it has the united support of the profession.

DR. L. ASHLEY FAUGHT:—I am a strong advocate of independent methods in dental journalism. It is not a new thought with the profession, but unfortunately it is one that has met with but little success. There have been attempts in this direction but for some reason they have all failed. There is not the slightest doubt in my mind, however, but that such a journal might be made to succeed.

---

* For Dr. Wheeler's paper, see page 249.

I know of many instances of the arbitrary dealings of the supply houses publishing journals and we have been suffering under these conditions for many years until they have become intolerable. I know a gentleman who read a very strong paper relative to this subject and before a society that was very much impressed thereby; but publication of that paper was absolutely refused by the journal publishing the proceedings of that society.

The movement that this society has undertaken has my hearty sympathy and will have my support in every way possible.

Dr. J. Morgan Howe.—It has been known to some of you that I have been interested for many years past in the maintenance of independent journals. The first dental journal that the world ever saw had its origin in 1839. It was published as well as edited by dentists. The old *"American Journal of Dental Science"* went out of existence in 1850. From that time, for many years, dental journalism has been largely in the hands of the manufacturers, although several journals, independent of their control, were issued. It seems to me that we are doing a very desirable and important work in maintaining our standard of ethics, to the extent that we are publishing our proceedings independently. It is, perhaps, worthy of note that whenever allegations have been made of the control of dental journals, or educational institutions, or societies, by dental supply houses, their editors have always been emphatic in claiming independence of the influence of their journals, by their owners.

I think papers and discussions of this kind are very valuable in stirring this matter up and calling it to the attention of the profession. I wish to advocate most urgently the liberal support of an independent journal, although I admit, of course, the great benefit that has resulted from the circulation of our literature, by means of the financial support of those who make and furnish our supplies.

Dr. F. L. Fossume.—I am heartily in favor of Dr. Wheeler's ideas. I think the time is ripe for such an undertaking but nevertheless, before going into such a thing it should be carefully planned and thought out lest the result be another failure. I hope Dr. Wheeler will succeed in arousing an interest in this matter.

Dr. J. B. Locherty.—I am heartily in sympathy with independent dental journalism as, no doubt, every man is who has the

best interests of the profession at heart. I see no reason why an independent journal should not succeed, if conducted along reasonable lines, even if others have failed.

Dr. F. Milton Smith.—There certainly is a tremendous distinction between a dental journal conducted upon business principles to teach respectable professional men the ethics of their profession and to call attention to the best things in the profession, and a journal conducted on the business principles of a commercial house and absolutely for commercial ends. And why should a professional man insist that he must have dollar for dollar, every penny back when he subscribes for a journal, instead of considering that that subscription is part of the small contribution he is in duty bound to give toward the bettering of his profession. I trust the time will come when we will have not one but many independent journals.

Dr. Wheeler.—I feel that I can add very little to the points already brought out. There is an attempt to exercise this same control in different departments of educational work, especially in the primary and secondary schools, where teachers are influenced to require certain text-books. The same thing would apply to scientific instruments, except for the fact that the imported instruments are so much superior and can be imported for educational purposes free of duty. The fact has been brought out that in order for a journal to be independent, it must have an independent editor. Many editors may think they are independent but are they? How can an editor, conducting a journal in the interests of a particular supply house, be independent. In editing an article filled with sharp criticism of the management and methods of his particular firm would it not be as much as his position is worth to allow such matter to pass uncensored, into his journal? It has been suggested that my paper is written in a spirit of antagonism to the dental houses. Not at all. I am merely antagonistic to their occupying fields that are not properly theirs. I realize their usefulness and have no antagonism for their legitimate work. I am greatly pleased with what has been said in commendation of the arguments I have tried to bring out. Every ethical professional man certainly should rather see his profession represented by an independent journal at a fair subscription price rather than by a journal published by a firm that will only allow

in its pages that which it thinks will further its own selfish interests, even if he receives such a journal gratis.

Adjourned.

The New York Institute of Stomatology.

A meeting of the Institute was held at the Chelsea, No. 222 West Twenty-third street, New York, Friday evening, November 9, 1906, the President, Dr. S. E. Davenport in the chair.

The minutes of the last meeting were read and approved.

Communications on Theory and Practice.

Dr. C. O. Kimball.—I wish to call attention to a small matter although a very important one in connection with the cleansing of teeth. For polishing between the teeth after the stick and pumice, I have never found anything better than floss silk waxed with yellow beeswax. I have always provided this heretofore by doubling the unwaxed floss into four strands and then waxing it myself. Owing to the efforts of Dr. Bogue this silk is now furnished by Cutter in ribbon form and waxed in the manner described. It seems to me this meets the situation perfectly.

Dr. Sinclair Tousey presented some lantern slides of X-ray pictures showing the possibility of making measurements of the teeth before eruption.

RADIOGRAPHIC (X-RAY) MEASUREMENT OF THE PERMANENT TEETH BEFORE ERUPTION TO PROVIDE FOR EARLY REGULATION OF THE DENTAL ARCH IF THEIR SIZE NECESSITATES IT.*

By Sinclair Tousey, A. M., M. D.,

This will be simply a brief preliminary statement in regard to a method which will form the subject for a more extended article to be published in due season.

Dr. Hawley's excellent paper in regard to the relation between the size and shape of the dental arch and the size of the different permanent teeth suggested to my good friend, Dr. Henry W. Gil-

*Read before the New York Institute of Stomatology, November 9, 1906.

lett, the advantage to be derived from an accurate measurement of the different permanent teeth a year or two before their eruption. Acting upon this idea, I have made X-ray pictures of the temporary and unerupted permanent teeth in about a hundred children. Lantern slides have been made from some of these pictures and these will be thrown upon the screen. While there was every reason to believe that such pictures would give an idea of the relative size of the teeth before eruption it seemed very desirable indeed to make a series of measurements to find out how much magnified or reduced the X-ray image of the teeth was, as compared with the measurements made from the teeth themselves. In all these cases of mine I have made measurements of the teeth which are already erupted by means of a caliper square, graduated in hundredths of an inch, and at another time without reference to these measurements I have made measurements of the same teeth as represented in the X-ray pictures. The result has been an exact correspondence to within a hundredth of an inch between the lateral measurements of the teeth and of the X-ray pictures of the teeth. For our purpose it is fortunately not necessary to have an exact means of measuring the vertical length of the teeth, but it will be seen from several of the lantern slides that a relative measurement is afforded by this method. The degree of absorption which has taken place in the roots of the temporary teeth shows very prettily in all of the pictures. The comparison between the X-ray measurements of the unerupted teeth and the actual measurement of the same at a later period, after eruption, is needed to complete the demonstration of the absolute accuracy of this method which I am bringing to your attention. These latter measurements I shall be able to make in the course of a year or two, and I shall be glad to inform the Society as to the closeness of correspondence between the present radiographic measurements and the future actual measurements. I believe, however, that while we are not yet positive that the measurements by this radiographic method are correct to within the hundredth part of an inch, that the relative size of the teeth, as shown in the pictures, will form an extremely valuable guide to the regulation of the dental arch for their reception.

One extremely interesting and valuable fact which I have observed in the hundred cases radiographed, is that the size of the

temporary teeth does not furnish any accurate indication of the size of the permanent unerupted teeth. Some of the largest unerupted permanent upper central incisors are found in cases with medium or small temporary upper central incisors. My pictures and measurements have been made especially in children of from four and a half to seven years of age, and in these cases my attention has been directed chiefly to the measurements of the upper and lower incisors. I have taken an impression of both dental arches by having the child bite upon a sheet of wax placed horizontly in the mouth.

Another class of cases in which radiographic measurements are valuable are the patients of young or middle age who have persistent temporary teeth, and in whom the X-ray reveals either the absence of the germ of the permanent tooth or, if it is present, shows its size and direction. Closely akin to these are the cases in which the natural loss of the temporary tooth has not been followed by the eruption of the permanent tooth. In both these classes of cases the relative size of the unerupted tooth, as compared with the adjacent permanent teeth, shown in the picture, gives at a glance the indication for proper spacing in order to allow of its eruption, and measurements in fractions of an inch or fractions of a millimeter are not usually required.

I am indebted to Dr. J. Lowe Young, of this city, for making measurements of the actual teeth in several of these cases and for instruction in the use of the instruments used for such measurements.

I will now call your attention to a few lantern slides made from cases in which I have made these measurements.

Dr. F. Milton Smith.—I have been greatly pleased with the pictures. I will confess that when the idea was first presented to

me I was rather skeptical as to the possibility of accomplishing what Dr. Tousey claims can be done, but upon seeing his demonstration, it seems to promise something of great value.

Dr. M. Schamberg.—The more I use the X-ray the more I am impressed with its wonderful possibilities for surgical diagnosis about the mouth. This suggestion of Dr. Tousey's is one that offers great opportunities for orthodontists in making plans for the correction of defects in occlusion at the earliest possible moment. However, in taking these measurements we must remember that all the unerupted teeth are not at the same distance from the film and for that reason the relative size of the different teeth may be to a certain extent distorted. Although this inaccuracy may be small, still it is well to remember that we are dealing with minute measurements.

Dr. Joseph Head.—I think the paper is of great importance because I believe in preparing the mouth for the reception of permanent teeth. Of course there is something in what Dr. Schamberg has said, still I think such a skigraph would give us the relative sizes of the teeth at least approximately and thus enable us to make room for them. There is certainly no harm done even if we get a little too much room. I am sure this paper will be the beginning of a series of very valuable researches in this field.

Dr. Tousey.—Referring to Dr. Schamberg's remarks, the disproportion undoubtedly does exist, but it is very slight and can be allowed for. I think such measurements could easily form the basis for the regulation of the dental arch.

Dr. E. A. Bogue:—It seems immaterial to me whether the size of the teeth in the picture are the same as the teeth themselves

so long as we have the size of the unerupted permanent teeth compared with the erupted temporary ones, thus showing the amount of space required for the permanent teeth.

THE PRESIDENT:—We are fortunate in having for our essayist this evening a gentleman who is well known for his proficiency in both the practical and theoretical departments of our specialty; an expert in the use of porcelain and an earnest worker in educational circles but we greet him with special warmth remembering that some years ago he was an associate editor of the International Journal. I take pleasure in introducing Dr. Joseph Head of Philadelphia, who will speak to us upon the subject: *"Wisdom Tooth Deterioration viewed in the light of Modern Oral-Antisepsis."*

THE PRESIDENT—Dr. Head's paper is now before the Institute for discussion.

DR. SCHAMBERG:—I see so many cases that have gone beyond the stage of cleaning, that I sometimes think it best to apply the forceps to the wisdom teeth, especially as often occurs, when they are decayed before they are fully erupted. I fear that in this twentieth century if we attempted to compel our patients to take sufficient time to properly cleanse these wisdom teeth, our instructions would not be obeyed. Then we have the cases of numerous infections around the flap of gum that usually lies over the back of these teeth. I am quite convinced that decay around these wisdom teeth is not so much due to our faulty methods of caring for them as it is to the faulty structure of the mouth and the absolute inability to keep them clean.

DR. J. B. LOCHERTY:—It seems to me that if we followed the theories just expressed we would do a great deal of extracting instead of practising conservative dentistry and saving teeth. While the third molar is in a position where it is greatly liable to caries, still it is a very important tooth many times, often coming into service when the other molars have been lost. I have found a small brush, often very satisfactory, the youth's size of the Prophylactic.

DR. F. MILTON SMITH:—I am reminded of a statement made in this society several years ago, "that a clean tooth never decays." I think this is true and I thoroughly agree with what Dr. Head has

---

* For Dr. Head's paper, see page 239.

said along this line. As to how to keep the wisdom teeth clean, up to the present I do not know of any motion nor any tooth brush that will do it perfectly. The brush that seems to come up to the requirements better than any single brush that I have ever found in the one devised by the late Dr. Clapp of Boston. In connection with this I want a brush with long stiff bristles and then one with bristles not so stiff to thoroughly brush the gums. I think with these three brushes and with the floss silk I can get the teeth pretty nearly clean.

In case I find decay around a wisdom tooth, I do not always extract it as advocated by Dr. Schamberg. I cannot countenance any such suggestion. There are many ways of arresting this decay, not the least important being the use of nitrate of silver generously, where conditions will permit.

Dr. J. Morgan Howe:—I am much pleased to have heard Dr. Head's presentation of this subject, especially as he has emphasized the mechanical cleansing of the teeth. However, the paper and the discussions have almost entirely overlooked the question of antiseptics. This fact seems the more remarkable because the use of antiseptics is so common. So many are exploited; they receive so much attention from dentists in general, and the public have so much confidence in them. Mechanical cleansing seems to me to be the principal thing; the real necessity. Generally when tooth powders are mentioned, a common requirement is that their ingredients be soluble. The dentist does not hesitate to use pumice to polish off deposits, but he frequently insists that his patients use a soluble powder. The exploitation of antiseptics is wide spread, and every effort is made to induce dentists to take stock in the manufacturing companies, so that they will recommend that particular preparation to their patients. I think the public is being victimized, and is getting a false idea of the value of these things. The antiseptic mouthwash idea seems to have originated years ago with Dr. Miller's discovery of the germicidal action of copper amalgam fillings. This produced a furor throughout the country; the inference was that teeth filled with copper amalgam would not decay. How many tons of copper amalgam were manufactured and sold throughout the country it would be difficult to say, but the results proved how little dependence could be placed upon this substance, although it was shown

to have a permanent antiseptic effect. Now what must we conclude will be the effect of teaching the public to depend upon antiseptic mouth washes?

Dr. Tousey:—I wish to call attention to the value of the X-ray sometimes in locating decay between the wisdom tooth and the second molar, where it is very difficult and wellnigh impossible to detect it in any other way.

Dr. Bogue:—Dr. Hasbrouck advocated the extraction of the wisdom teeth and asked me why it would not be a wise thing to do in most cases. My answer was that the wisdom tooth is the key to the situation.

Dr. Head has called our attention to the development of the wisdom tooth. It is the failure of the enamel on the opposite sides of the sulcii to abutt that causes these defects in the fissures of the molar teeth, so common. Then Dr. Head has drawn attention to the necessity of the thorough cleansing of these teeth. I think it was Dr. McNaughton who told me of a syringe devised so that a good deal of power could be applied to it, to be used for carrying away the detritis collecting around these teeth.

I find myself using three brushes at least. Dr. Clapp's, Dr. Head's and another small hard one, brushing all the time with my mouth filled with water.

Dr. W. M. Whitlock:—Dr. Osler said in an address to a graduating class of medical students that they ought to consider it a duty and a privilege to impress upon their patients the importance of the functions of the teeth. Even before reading this address, when cleansing a set of teeth I have tried to impress this point upon my patients, that the most important thing for them to do for their teeth is to use them. I have tried to show them the important part the teeth play in the matter of digestion, that the health of one part oftentimes means the health of the entire body, and this particularly the case where the teeth are concerned. And what they need most of all is proper exercise. I also believe in exercising the gums. It is sometimes claimed that the brushing of the gums causes irritation and recession. On the contrary I think these very conditions arise from not brushing the gums enough and I have seen this inflammation relieved and cured by a vigorous brushing. Following out this same idea regarding the wisdom teeth, we all know that there are some practically perfect

arches where the wisdom teeth occupy their true and normal position and perform their proper share of the burden of mastication. From this happy condition we see arches all the way down to the one where there positively is not enough room for the wisdom teeth to come through and where they are either malformed or impacted. I believe that the reason for these poorly developed, unexpanded arches may many times be traced to a lack of proper exercise during the developemental period. I would add that in these particular cases where there is evidently a lack of room, it is better to have the third molar removed.

Dr. H. L. Wheeler:—I think friction is the logical solution of the question of cleansing the teeth. I thoroughly agree with Dr. Whitlock's ideas regarding exercise and I think a judicious exercising of the gums is also an essential.

Dr. Head:—It has been remarked that it takes a special tooth brush for the different localities in the mouth. With any tooth brush I can brush as I have described and get satisfactory results. I have made a series of tests to determine the amount of harm that could accrue from the most vigorous brushing and I have found that it is practically impossible to cause much harm from a thorough systematic brushing of the teeth provided an abrasive is not used. The only powder that I ever use on my teeth is the carbonate of magnesia. This is something that you ought to look into.

Regarding mouthwashes. A mouth wash is, I think, quite as valuable as a tooth brush but too much must not be expected of it. While the wash may not actually destroy the germs if a concentrated solution is held in the mouth from two to five minutes it will make the germs so sick that they will not do much active work for the next twenty-four hours, when the teeth will be practically as free as if the germs were not there at all. I believe a proper mouth wash, held in the mouth at least two minutes, a valuable adjunct.

A hearty vote of thanks was extended to Dr. Head for his valuable paper.

Adjourned.

Fred'k. L. Bogue, M. D., D. D. S.,
Editor The New York Institute of Stomatology.

THE NEW YORK INSTITUTE OF STOMATOLOGY. PRIZE ESSAY MATTER.

The committee appointed by the Institute in the above matter desires to announce that some excellent papers were submitted in competition but that in the judgment of the committee selected as judges, there was no paper, the writer of which should be awarded a prize as offered.

The Institute desires to extend thanks to all contestants, to all journals which published our offer and especially to the judges whose report is herewith appended.

F. MILTON SMITH,
Chairman Prize Essay Committee.

TO THE OFFICERS OF THE NEW YORK INSTITUTE OF STOMATOLOGY.

GENTLEMEN:—We, the undersigned, who were selected by the Institute to act as judges in the prize essay competition, beg leave to report that after a most careful and extended consideration of all the papers submitted, we regret that we do not find any paper which under the rules of the competition, as laid down by the Institute, is deemed worthy of a prize, and we accordingly recommend that none be awarded.

[SIGNED.]

C. N. JOHNSON,
EUGENE H. SMITH,
WILBER F. LITCH.

RESOLUTIONS ADOPTED BY THE AMERICAN SOCIETY OF ORTHODONTISTS,

New York, December 29, 1907.

Resolved: That in the opinion of the members of the American Society of Orthodontists, the practice of paying a commission, honorarium, or any sort of fee, in consideration for the reference of a patient is both unwarrantable and unprofessional; and be it

Resolved: That the payment of any such commission, honor-

arium, or fee, by any member of this Society, shall be sufficient cause for the expulsion of said member, by vote of the Society after conviction; and further be it

Resolved: That in case of co-operation in the care of a patient between a general practitioner and an Orthodontist, there shall be no division of fees, but each man shall render a separate bill for his personal services.

FREDERICK S. McKAY,
Secretary.

Contents of Volume 1.

Introduction 1
Extraction of Permanent Teeth 3
By Eugene H. Smith, D. M. D., Boston, Mass.
Contagious Eruptions of the Face, Mouth and Scalp to which the Dental Profession is Exposed 18
By Charles J. White, M. D., Instructor of Dermatology in Harvard University.
Heart Pathology 28
By C. M. Glazier, D. M. D., Roxbury, Mass.
Conservation of the Dental Pulp 36
By Dr. Louis Jack, of Philadelphia, Pa.
Regulating Appliances 47
By L. M. Cowardin, M. D., D. D. S., Richmond, Va.
A Method of Constructing Porcelain Inlays in Restoring Contours of Incisors, Using a Section of Porcelain Tooth in Combination with High or Medium Fusing Bodies . . . 51
By Dr. Karl C. Smith.
Minutes—The New York Institute of Stomatology . . 53 and 75
Resolutions upon the Death of Dr. Charles F. Allan . . . 75
Our Creed 85
The Rise and Fall of National Dental Organizations . . . 87
By James Truman, D. D. S., Philadelphia.
An Accurate Method in Orthodontia 98
By C. A. Hawley, D. D. S., Columbus, Ohio.
Compound and Combination Fillings 119
By Horatio C. Meriam, D. D. S., Salem, Mass.
Pyorrhea—Alveolaris 131
By Hector Griswold, Salt Lake City.
Minutes—The New York Institute of Stomatology . . 139-155
Obituary—Dr. Joseph N. Davenport 161
Our Aim 163
On the Formation of the Teeth, and the Reasons Why the Protective Covering Is So Often Defective or Deficient . . . 165
By R. R. Andrews, A. M., D. D. S., Cambridge, Mass.
Theories Made Facts 180
By E. A. Bogue, M. D., D. D. S.
Minutes—American Academy of Dental Science . . . 196
Cement 200-208
By R. R. Andrews, D. D. S., Cambridge, Mass.
A New Filling Material 204
By Harry E. Cutter, D. D. S., Cambridge, Mass.
Pathological Conditions of the Roots of Teeth . . . 212
By George T. Baker, D. D. S., Boston.
Minutes—The New York Institute of Stomatology . . 215-220
"Noblesse Oblige" 227
Cancer in and About the Mouth, at the Boston City Hospital . 231
By David D. Scannell, M. D., Boston, Mass.
The So-Called Inferiority of the Wisdom Teeth, Viewed in the Light of Modern Prophylaxis 239
By Dr. Joseph Head, Philadelphia, Pa.
Cervical Adenitis with Reference to Mouth Infection . . . 242
By Francis A. Donoghue, M. D., Boston, Mass.
The Need of an Independent Journal in the Dental Profession . 249
By Herbert L. Wheeler, D. D. S., New York City.
Minutes—The New York Institute of Stomatology . . 259 and 264
Radiographic (X-ray) Measurement of the Permanent Teeth Before Eruption, to Provide for Early Regulation of the Dental Arch if Their Size Necessitates It 264
By Sinclair Tousey, A. M., M. D., New York City.
The New York Institute of Stomatology Prize Essay Matter . . 272
Resolutions Adopted by the American Society of Orthodontists . 272

Date Due

Journal of the Allied Dental Societies Vol 1 1906 Copy 1